

**CORRESPONDENCE/MEMORANDUM**

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TO: File – AM/7  
FROM: John Roth – AM/7  
SUBJECT: AERMET Processing of Wisconsin NWS/FAA Data

**A. INTRODUCTION**

The United States Environmental Protection Agency (USEPA), in conjunction with the American Meteorological Society (AMS), formed AERMIC (AMS/EPA Regulatory Model Improvement Committee) in 1990 to develop a new generation of atmospheric dispersion models. The result of this collaboration is AERMOD (AERMIC Model). During this same period, the Energy Power Research Institute (EPRI) developed an enhanced downwash algorithm called PRIME (Plume Rise Model Enhancements). USEPA inserted the PRIME algorithms into AERMOD and promulgated a formal change to the Guideline on Air Quality Models, listing AERMOD as the recommended dispersion model for regulatory applications.

Due to the significant meteorological data requirements for AERMOD, WDNR obtained new raw data sets (1998-2002) from the National Climate Data Center for processing with the AERMOD Meteorological Preprocessor (AERMET). The raw data was collected at a variety of National Weather Service (NWS) and Federal Aviation Administration (FAA) locations. This memorandum details the procedures used to develop the regulatory dispersion modeling data sets.

**B. UPPER AIR PROCESSING**

Upper air data for the period 1998-2002 for Green Bay, Wisconsin (GRB) and Minneapolis, Minnesota (MPX) were collected from the National Oceanic and Atmospheric Administration (NOAA) Forecast Systems Laboratory Radiosonde Database ([raob.fsl.noaa.gov](http://raob.fsl.noaa.gov)).

Each of the ten raw data files (five years times two locations) was reviewed for completeness. When a sounding was missing, the data was replaced with the sounding from the same time from the other location. Due to the difference in ground elevation between GRB and MPX, a correction was made to the station elevation, and the station pressure was adjusted by five millibars (5 mb) up or down, as appropriate. If the corroborating sounding was also missing, the sounding from the same location but 24 hours prior to the missing one was substituted with no adjustments. For the MPX data, warnings were noted for some soundings when cross-filled with GRB data, so those missing MPX soundings were re-replaced with soundings from the same location but 24 hours prior to the missing data. In addition, since the sounding files are in Universal Time Coordinates (UTC), the calendar day of December 31 actually crosses into the next year. To avoid this, the following January 1 day was copied and pasted onto the end of the previous year. For the files in calendar year 2002, the data from December 31, 2002 was made into January 1, 2003.

Following the data-filling stage, all soundings were processed through Stage 1 of AERMET. Appendix 1 contains the input files from one year of processing for each site.

**C. SURFACE PROCESSING**

Surface data from 1998-2002 was collected from compact discs ordered from the National Climate Data Center containing the Integrated Surface Hourly Data (ISHD), in the TD-3505 data format. Data from all stations within Wisconsin were extracted from the discs for further processing. If data was not present for any year within the period, that location was discarded. Thirty-five (35) stations met this first completeness test.



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Initially an attempt was made to manually fill missing data fields within the raw data files to meet 100% data coverage. But it was soon apparent that this would add some degree of subjectivity to the process, so the procedures used to fill missing data were standardized into Fortran programs. As more locations were analyzed, changes were needed and more programs were written, until the procedure was finalized. At this point, ALL stations were re-analyzed such that the entire process was consistent across all locations.

The procedures used generally follow those described in the USEPA document, “Meteorological Monitoring Guidance for Regulatory Modeling Applications” and the USEPA policy memo, “Procedures for Substituting Values for Missing NWS Meteorological Data for Use in Regulatory Air Quality Models”. The following list details the procedures, followed in order, with references to the Fortran programs used in each stage. The output file from each program is used as the input file to the next program so that everything is additive. Appendix 2 contains all the Fortran code for all of the programs used in the surface data processing.

- End of Year – Since the ISHD files are in Universal Time Coordinates (UTC), the calendar day of December 31 actually crosses into the next year. To avoid this, the following January 1 day was copied and pasted onto the end of the previous year. For the files in calendar year 2002, the data from December 31, 2002 was made into January 1, 2003.
- Time Adjustment – Each station was put through the TADJ program that looks for the minute of the observation. If it was greater than 30 but less than 50, TADJ changed it to 51 minutes after the hour. It was noticed that AERMET only finds the raw observation if it is less than 10 minutes before the hour. For some of the Wisconsin stations, particularly the ones in lower populated areas, the time of the hourly observation was consistently more than 10 minutes before the hour. Regardless, the observation represents the meteorological conditions in the area, and by adjusting the time, these measurements could be used. Finally, some of the hours were discarded by AERMET due to the type of observation recorded in the data. When necessary, this program changed the observation type so AERMET could find and read the data.
- Wind Speed Fill – Following the time adjustment, each raw data file was put through the WSFILL program to interpolate missing wind speeds. In some instances, the observation existed but the wind speed was missing, so WSFILL was written to linearly interpolate wind speed over 1, 2, or 3 missing observations.
- Dry Bulb Temperature Fill – After the wind speed program, each raw data file was put through the TMFILL program to interpolate dry bulb temperature. As with wind speed, in some instances, the observation existed but the temperature was missing, so TMFILL was written to linearly interpolate temperature over 1, 2, or 3 missing observations.
- Wind Direction Fill – Following the temperature program, wind direction was analyzed. The WDFILL program is more complex than the other two data filling programs due to the nature of the measurement of wind direction. The value for compass direction is circular (e.g. 350 is closer to 010 than it is to 180), so allowances for the various conditional tests was taken. In addition, the program was verified by comparing, by hand, two filled files to the unfilled files. Essentially, WDFILL performs the same linear interpolations over 1, 2, 3, and 4 missing observations, but includes additional code if the gap is 5 or 6 observations (simple replacement) and a random number (between 010 and 360) if the gap is longer.

After the wind direction fill, each raw data file is saved to an ‘A’ file (e.g. msn98.ish becomes msn98A.ish).

- Missing Observation Fill – Following the component fills, the next program (HRFILL) looks for missing hours in the data files. Since the time of observation is recorded as a four digit integer, care was taken in the program to insure that only one hour was filled. This program used simple replacement when a single missing hour was found, putting the previous observation in place of the missing one.
- Second Missing Observation Fill – The missing hour test was performed again, but this time looking for gaps of two hours. This program (HRFILL2) used the observation before the gap and the one after the gap to fill in the two missing observations.

- After the second missing observation fill, the raw data file is put into a ‘B’ file (e.g. msn98B.ish) and all stations are processed through Stage 1 of AERMET. At this point in the processing, each file was run through all the subsequent stages of AERMET and through a test AERMOD run to assess data completeness. The USEPA threshold for data coverage is 90%, and locations where any of the five years of data did not meet this test were discarded. The following table lists stations in Wisconsin analyzed that did not meet minimum data requirements.

Wisconsin Stations > 10% Missing Data			
FAA ID	Name	FAA ID	Name
KUES	Waukesha	KPBH	Phillips/Price Co.
KATW	Appleton/Outagamie	KRAC	Racine
KRYV	Watertown	KENW	Kenosha Regional
KMNM	Menominee, MI	KAIG	Antigo
KJVL	Janesville/Rock Co.	KSUW	Superior
KLNR	Lone Rock FAA AP	KVOK	Volk Field ANG
KRPD	Rice Lake Municipal		

After the processing for missing data there are twenty-two (22) stations for use in AERMOD in Wisconsin. Appendix 3 contains the Stage 1 AERMET input files for each of these 22 remaining stations. No further processing was completed for the 13 stations listed in the table. With the surface and upper air data Stage 1 processing complete, the next step was to merge the data. Appendix 4 contains the Stage 2 AERMET input files for the 22 stations.

#### D. LAND USE PROCESSING

Land-use data was collected from the United States Geological Survey (USGS) and from various regional planning commissions. WDNR had previously collected these files to perform statewide hazardous air pollutant assessments, and had classified the land-use using the Anderson Level 2 scheme. This scheme was applied to all files and reflects the basic land-use categories used by USEPA. Please refer to Appendix 5 for details on what each land-use code represents. A GIS system was utilized to obtain the specific land-use information around each meteorological station. Specific locations of the instrument package at each airport were obtained from the Internet ([weather.gladstonefamily.net/site](http://weather.gladstonefamily.net/site)) and in-house aerial photos.

The area around the instruments was broken into twelve (12) thirty degree sectors, with the cardinal directions at the center of their sector (i.e. 345-015, 015-045, ..., 315-345). Taking an average, based on area, of the land-use within each sector would bias the results to those polygons furthest from the instrument. So, within each sector points were placed every 20 meters apart out to 3000 meters on radials spaced 2° apart, for a total of 2250 points per sector. By using points along the radial, any bias with distance was minimized. The choice for spacing of the points was made so that the minimum distance between any two points was about one meter apart.

The land-use shapefile and the sector points shapefile were projected into the same coordinate system and displayed on top of each other. Next, the value of land-use code that lay under each point in the sector file was obtained. The data table from this joined shapefile was then exported into an Excel spreadsheet. Any point with missing land-use code was filled by hand based on a review of both the land-use shapefile and the aerial photograph. The data table was sorted by radial, then by the distance from instrument. Following this, the land-use code for each point was converted to the appropriate albedo, Bowen ratio, and roughness length for each season using a lookup table (Appendix 5). The values in the lookup table come from the AERMET User’s Guide, with the values for roughness length specifically from table F-2. Finally the sector median for each component for each season was derived.

For many of the locations, land use shapefiles from within the past 5 years were received from the regional planning commissions. However for some, USGS files were available. For these stations (LSE, MRJ, UNU, IMT, RHI, HYR, RGK, DLL) the USGS data was modified using aerial photos from the mid-1990's. For LSE and RGK, the boundary between land and water was incorrect so that was modified. For MRJ, UNU, IMT, and HYR the city and the airport had grown in the intervening years, so the land-use shapefile was adjusted accordingly. For RHI and DLL, the forest and lake regions were incorrect, so adjustments were made.

#### **E. FINAL PROCESSING**

The land-use information obtained in the previous step was input to the AERMET Stage 3 input files contained in Appendix 6. After processing through Stage 3, the surface and profile files input directly into AERMOD are obtained. Each file was run through a test to insure that AERMOD worked. In addition, the total number of missing and calm hours was recorded for completeness sake. Appendix 7 is a repeat of the information available on the WDNR web site, including a table with the statistics and a map that provides location information.

## **APPENDIX 1**

### **Upper Air Stage 1 AERMET Input Files**

#### **Green Bay**

```
JOB
  REPORT      GRB98Au.RPT
  MESSAGES    GRB98Au.MSG

UPPERAIR
  DATA        grb98a.txt  FSL  1
  EXTRACT     GRB98_UA.IQA
  QAOOUT      GRB98_UA.OQA
  XDATES      98/1/1 TO 98/12/31
  LOCATION    00014898  88.13W  44.48N  6
  AUDIT       UATT  UAWS  UALR
```

#### **Minneapolis**

```
JOB
  REPORT      MPX01Au.RPT
  MESSAGES    MPX01Au.MSG

UPPERAIR
  DATA        mpx01a.txt  FSL  1
  EXTRACT     MPX01_UA.IQA
  QAOOUT      MPX01_UA.OQA
  XDATES      01/1/1 TO 01/12/31
  LOCATION    00094983  93.55W  44.83N  6
  AUDIT       UATT  UAWS  UALR
```

## APPENDIX 2

### Fortran Code for Filling Programs

#### TADJ

```
c23456789
c This program adjusts the surface hour time from 31 to 50 min
c before the hour to 51 min before the hour so AERMET will read it.
c It also moves any report from 01 to 05 min after to 00, and
c changes the 'AUTO' report type to 'FM-16'.

character*25  c1
character*2  c2
character*6  c3
character*597 c4
character*10 name1
character*10 name2

write(6,*)"Enter ISHD File "
read(5,'(a10)')name1
write(6,*)"Enter # of Records"
read(5,'(i5)')icount
write(6,*)"Enter Out File "
read(5,'(a10)')name2
open(unit=8,file=name1,status='old')
open(unit=9,file=name2,status='unknown')

c This is the loop that checks and converts, if necessary.

do 20 i=1,icount
  read (8,101) c1,c2,c3,c4
  if (c3.eq.'4AUTO ') then
    c3='4FM-16'
  end if
  if (c2.eq.'31') then
    c2='51'
  end if
  if (c2.eq.'32') then
    c2='51'
  end if
  if (c2.eq.'33') then
    c2='51'
  end if
  if (c2.eq.'34') then
    c2='51'
  end if
  if (c2.eq.'35') then
    c2='51'
  end if
  if (c2.eq.'36') then
    c2='51'
  end if
  if (c2.eq.'37') then
    c2='51'
  end if
  if (c2.eq.'38') then
    c2='51'
  end if
  if (c2.eq.'39') then
    c2='51'
  end if
  if (c2.eq.'40') then
    c2='51'
  end if
  if (c2.eq.'41') then
    c2='51'
  end if
```

```
if (c2.eq.'42') then
  c2='51'
end if
if (c2.eq.'43') then
  c2='51'
end if
if (c2.eq.'44') then
  c2='51'
end if
if (c2.eq.'45') then
  c2='51'
end if
if (c2.eq.'46') then
  c2='51'
end if
if (c2.eq.'47') then
  c2='51'
end if
if (c2.eq.'48') then
  c2='51'
end if
if (c2.eq.'49') then
  c2='51'
end if
if (c2.eq.'50') then
  c2='51'
end if
if (c2.eq.'01') then
  c2='00'
end if
if (c2.eq.'02') then
  c2='00'
end if
if (c2.eq.'03') then
  c2='00'
end if
if (c2.eq.'04') then
  c2='00'
end if
if (c2.eq.'05') then
  c2='00'
end if
write(9,101)c1,c2,c3,c4
20 continue
```

```
101 format(a25,a2,a6,a597)
      end
```

**WSFILL**

c23456789

c This program interpolates wind speed from the ISHD data.  
c It is designed to be a series of IF-THEN-ELSE statements that  
c work down the file, filling through interpolation.

```
character*38 a1
character*589 a2
character*10 name1
character*10 name2
integer iws(25000)

write(6,*)"Enter ISHD File "
read(5,'(a10)')name1
write(6,*)"Enter # of Records"
read(5,'(i5)')icount
write(6,*)"Enter Out File "
read(5,'(a10)')name2
open(unit=8,file=name1,status='old')
open(unit=9,file=name2,status='unknown')
open(unit=10,file='sum',status='unknown')
```

c This loop brings the data into the arrays, then rewinds the file.

```
do 10 i=1,icount
      read(8,101)a1,iws(i),icode,a2
10 continue
      rewind(8)
```

c This is the first of the three interpolation loops.

```
do 20 i=1,icount
c First, pass through any data not missing.
      if (iws(i).ne.9999) goto 20
```

c First determine if there are TMP just previous and just after the  
c missing obs. If so, interpolate.

```
      if (iws(i-1).ne.9999.and.iws(i+1).ne.9999) then
          iws(i)=int((iws(i-1)+iws(i+1))/2)
      else
```

c If there is not good data right ahead and right behind the missing,  
c start to move out from the immediate neighbors to find data.  
c This loop looks one behind and TWO ahead and performs the same calcs.

```
      if (iws(i-1).ne.9999.and.iws(i+2).ne.9999) then
          iws(i)=int((iws(i-1)+iws(i+2))/2)
      else
```

c Following convention above, check one behind and THREE ahead.

```
      if (iws(i-1).ne.9999.and.iws(i+3).ne.9999) then
          iws(i)=int((iws(i-1)+iws(i+3))/2)
      else
```

c If there still is no data, then if the previous obs is good, just  
c replace the missing obs with the previous hour.

```
      if (iws(i-1).ne.9999) then
          iws(i)=iws(i-1)
      else
```

c If this still doesn't work, then replace the missing obs with the  
c data from four obs ahead.

```
iws(i)=iws(i+4)
```

```
        end if
    end if
end if
end if
20 continue

do 30 i=1,icount
    read(8,101)a1,idum1,icode,a2
    if (icode.eq.9) then
        icode=1
    end if
    write(9,102)a1,iws(i),icode,a2

c This SUM file contains the old TMP and new TMP for verification purposes

    write(10,103)a1,idum1,iws(i)
30 continue

101 format(a38,i4,i1,a589)
102 format(a38,i4.4,i1,a589)
103 format(a38,i4.4,i4.4)

end
```

**WDFILL**

c23456789

c This program interpolates wind direction from the ISHD data.  
c It is designed to be a series of IF-THEN-ELSE statements that  
c work down the file, filling through interpolation.

```
character*33  a1
character*2  a2
character*588 a3
character*9   name1
character*10  name2
integer iwd(25000),iws(25000)

write(6,*)"Enter ISHD File "
read(5,'(a9)')name1
write(6,*)"Enter # of Records"
read(5,'(i5)')icount
write(6,*)"Enter Out File "
read(5,'(a10)')name2
open(unit=8,file=name1,status='old')
open(unit=9,file=name2,status='unknown')
open(unit=10,file='sum',status='unknown')
```

c This loop brings the data into the arrays, then rewinds the file.

```
do 10 i=1,icount
      read(8,101)a1,iwd(i),a2,iws(i),a3
10 continue
      rewind(8)
```

c This is the first of the three interpolation loops.

```
do 20 i=1,icount
```

c First, pass through any data not missing.

```
if (iwd(i).ne.999) goto 20
```

c Next, pass through any data where wind direction is missing,  
c but wind speed is zero. These are the calm observations.

```
if (iwd(i).eq.999.and.iws(i).eq.0) then
      goto 20
```

c What is left should be obss where the wind direction is missing  
c and the wind speed is not zero.

```
else
```

c First determine if there are WD just previous and just after the  
c missing obs. If so, interpolate.

```
if (iwd(i-1).ne.999.and.iwd(i+1).ne.999) then
```

c Since WD is circular, if WD1 is > 270 and WD2 <90, then add 360 degrees  
c to WD2 and interpolate. If the result is over 360, subtract 360 to put  
c the result in the northeast quadrant.

```
if (iwd(i-1).gt.270.and.iwd(i+1).lt.90) then
      iw=iwd(i+1)+360
      iwd(i)=int((iw+iwd(i-1))/2)
      if (iwd(i).gt.360) then
          iwd(i)=iwd(i)-360
      end if
```

c This next check makes sure the result is rounded to the nearest ten.

```
iwd(i)=int(iwd(i)/10)*10
else
```

```

c This next loop checks on whether WD1 < 90 and WD2 > 270 and interpolates.

    if (iwd(i+1).gt.270.and.iwd(i-1).lt.90) then
        iw=iwd(i-1)+360
        iwd(i)=int((iw+iwd(i+1))/2)
        if (iwd(i).gt.360) then
            iwd(i)=iwd(i)-360
        end if
        iwd(i)=int(iwd(i)/10)*10
    else

c If neither WD meets the criteria above, then just interpolate.

        iwd(i)=int((iwd(i-1)+iwd(i+1))/2)
        iwd(i)=int(iwd(i)/10)*10
    end if
end if
if (iwd(i).eq.0) then
    iwd(i)=360
end if
else

c If there is not good data right ahead and right behind the missing,
c start to move out from the immediate neighbors to find data.
c This loop looks one behind and TWO ahead and performs the same calcs.

    if (iwd(i-1).ne.999.and.iwd(i+2).ne.999) then
        if (iwd(i-1).gt.270.and.iwd(i+2).lt.90) then
            iw=iwd(i+2)+360
            iwd(i)=int((iw+iwd(i-1))/2)
            if (iwd(i).gt.360) then
                iwd(i)=iwd(i)-360
            end if
            iwd(i)=int(iwd(i)/10)*10
        else
            if (iwd(i+2).gt.270.and.iwd(i-1).lt.90) then
                iw=iwd(i-1)+360
                iwd(i)=int((iw+iwd(i+2))/2)
                if (iwd(i).gt.360) then
                    iwd(i)=iwd(i)-360
                end if
                iwd(i)=int(iwd(i)/10)*10
            else
                iwd(i)=int((iwd(i-1)+iwd(i+2))/2)
                iwd(i)=int(iwd(i)/10)*10
            end if
        end if
        if (iwd(i).eq.0) then
            iwd(i)=360
        end if
    else

```

c Following convention above, check one behind and THREE ahead.

```

        if (iwd(i-1).ne.999.and.iwd(i+3).ne.999) then
            if (iwd(i-1).gt.270.and.iwd(i+3).lt.90) then
                iw=iwd(i+3)+360
                iwd(i)=int((iw+iwd(i-1))/2)
                if (iwd(i).gt.360) then
                    iwd(i)=iwd(i)-360
                end if
                iwd(i)=int(iwd(i)/10)*10
            else
                if (iwd(i+3).gt.270.and.iwd(i-1).lt.90) then
                    iw=iwd(i-1)+360
                    iwd(i)=int((iw+iwd(i+3))/2)
                    if (iwd(i).gt.360) then
                        iwd(i)=iwd(i)-360
                    end if
                    iwd(i)=int(iwd(i)/10)*10
                else

```

```

        iwd(i)=int((iwd(i-1)+iwd(i+3))/2)
        iwd(i)=int(iwd(i)/10)*10
    end if
end if
if (iwd(i).eq.0) then
    iwd(i)=360
end if
else

c If there still is no data, then if the previous obs is good, just
c replace the missing obs with the previous hour.

    if (iwd(i-1).ne.999) then
        iwd(i)=iwd(i-1)
    end if

c If this still doesn't work, then replace the missing obs with the
c data from four obs ahead.

    iwd(i)=iwd(i+4)
    end if
    end if
    end if
    end if
20 continue

c This next loop takes the previous interpolation and reverses the signs.
c In other words instead of looking one behind and two ahead, look one
c ahead and two observations behind. The first part of the loop is the
c same as above because it is replacing the WD data as it goes along. So now
c filled data can be used to fill more, thus making the change in WD smooth.

do 25 i=1,icount
    if (iwd(i).ne.999) goto 25
    if (iwd(i).eq.999.and.iws(i).eq.0) then
        goto 25
    else
        if (iwd(i-1).ne.999.and.iwd(i+1).ne.999) then
            if (iwd(i-1).gt.270.and.iwd(i+1).lt.90) then
                iw=iwd(i+1)+360
                iwd(i)=int((iw+iwd(i-1))/2)
                if (iwd(i).gt.360) then
                    iwd(i)=iwd(i)-360
                end if
                iwd(i)=int(iwd(i)/10)*10
            else
                if (iwd(i+1).gt.270.and.iwd(i-1).lt.90) then
                    iw=iwd(i-1)+360
                    iwd(i)=int((iw+iwd(i+1))/2)
                    if (iwd(i).gt.360) then
                        iwd(i)=iwd(i)-360
                    end if
                    iwd(i)=int(iwd(i)/10)*10
                else
                    iwd(i)=int((iwd(i-1)+iwd(i+1))/2)
                    iwd(i)=int(iwd(i)/10)*10
                end if
            end if
            if (iwd(i).eq.0) then
                iwd(i)=360
            end if
        else
            if (iwd(i+1).ne.999.and.iwd(i-2).ne.999) then
                if (iwd(i+1).gt.270.and.iwd(i-2).lt.90) then
                    iw=iwd(i-2)+360
                    iwd(i)=int((iw+iwd(i+1))/2)
                    if (iwd(i).gt.360) then
                        iwd(i)=iwd(i)-360

```

```

        end if
        iwd(i)=int(iwd(i)/10)*10
    else
        if (iwd(i-2).gt.270.and.iwd(i+1).lt.90) then
            iw=iwd(i+1)+360
            iwd(i)=int((iw+iwd(i-2))/2)
            if (iwd(i).gt.360) then
                iwd(i)=iwd(i)-360
            end if
            iwd(i)=int(iwd(i)/10)*10
        else
            iwd(i)=int((iwd(i+1)+iwd(i-2))/2)
            iwd(i)=int(iwd(i)/10)*10
        end if
    end if
    if (iwd(i).eq.0) then
        iwd(i)=360
    end if
else

```

c Now one ahead and three behind.

```

if (iwd(i+1).ne.999.and.iwd(i-3).ne.999) then
    if (iwd(i+1).gt.270.and.iwd(i-3).lt.90) then
        iw=iwd(i-3)+360
        iwd(i)=int((iw+iwd(i+1))/2)
        if (iwd(i).gt.360) then
            iwd(i)=iwd(i)-360
        end if
        iwd(i)=int(iwd(i)/10)*10
    else
        if (iwd(i-3).gt.270.and.iwd(i+1).lt.90) then
            iw=iwd(i+1)+360
            iwd(i)=int((iw+iwd(i-3))/2)
            if (iwd(i).gt.360) then
                iwd(i)=iwd(i)-360
            end if
            iwd(i)=int(iwd(i)/10)*10
        else
            iwd(i)=int((iwd(i+1)+iwd(i-3))/2)
            iwd(i)=int(iwd(i)/10)*10
        end if
    end if
    if (iwd(i).eq.0) then
        iwd(i)=360
    end if
else

```

c Now use the data one ahead.

```

if (iwd(i+1).ne.999) then
    iwd(i)=iwd(i+1)
end if

```

c Or use the data four behind.

```

        iwd(i)=iwd(i-4)
    end if
end if
end if
end if
25 continue

```

c There still were some long stretches of missing or calm, interspersed with  
c an obs or two that needed to be filled. Assuming all other gaps were  
c already filled, the following loop replaces missing with the given hour.

```

do 27 i=1,icount
if (iwd(i).ne.999) goto 27
if (iwd(i).eq.999.and.iws(i).eq.0) then
    goto 27

```

```

    else

c If the WD FIVE obs back is present, use it.

    if (iwd(i-5).ne.999) then
        iwd(i)=iwd(i-5)
    else

c Else if the WD FIVE obs ahead is present, use it.

    if (iwd(i+5).ne.999) then
        iwd(i)=iwd(i+5)
    else

c Else if the WD SIX obs back is present, use it.

    if (iwd(i-6).ne.999) then
        iwd(i)=iwd(i-6)
    else

c Else if the WD SIX obs ahead is present, use it.

    if (iwd(i+6).ne.999) then
        iwd(i)=iwd(i+6)
    else

c Else the gap is larger than six hours in both directions, so is probably
c a long period of calm with an hour or two of light, variable winds.
c In this case generate a random wind direction to put in.

        call seed (RND$TIMESEED)
        call random (ratio)
        wd=360.*ratio
        itmp2=int(wd)
        iwd(i)=int(itmp2/10)*10
        end if
        end if
        end if
        end if
        end if
27 continue

c Since very few wind speeds were actually missing (< 10 obs per year)
c just replace the missing with zero (calm hour).

do 29 i=1,icount
    if (iws(i).eq.9999) then
        iws(i)=0
    end if
29 continue

do 30 i=1,icount
    read(8,101)a1,idum1,a2,idum2,a3
    write(9,102)a1,iwd(i),a2,iws(i),a3

c This SUM file contains the old WD and the new WD for purposes of checking.

    write(10,*)a1,idum1,iwd(i),iws(i)
30 continue

101 format(a33,i3,a2,i4,a588)
102 format(a33,i3.3,a2,i4.4,a588)

end

```

**TMFILL**

c23456789

c This program interpolates temperature from the ISHD data.  
c It is designed to be a series of IF-THEN-ELSE statements that  
c work down the file, filling through interpolation.

```
character*60 a1
character*564 a2
character*10 name1
character*10 name2
integer itmp(25000)

write(6,*)"Enter ISHD File "
read(5,'(a10)')name1
write(6,*)"Enter # of Records"
read(5,'(i5)')icount
write(6,*)"Enter Out File "
read(5,'(a10)')name2
open(unit=8,file=name1,status='old')
open(unit=9,file=name2,status='unknown')
open(unit=10,file='sum',status='unknown')
```

c This loop brings the data into the arrays, then rewinds the file.

```
do 10 i=1,icount
      read(8,101)a1,itmp(i),icode,a2
10 continue
      rewind(8)
```

c This is the first of the three interpolation loops.

```
do 20 i=1,icount
c First, pass through any data not missing.
      if (itmp(i).ne.9999) goto 20
```

c First determine if there are TMP just previous and just after the  
c missing obs. If so, interpolate.

```
      if (itmp(i-1).ne.9999.and.itmp(i+1).ne.9999) then
          itmp(i)=int((itmp(i-1)+itmp(i+1))/2)
      else
```

c If there is not good data right ahead and right behind the missing,  
c start to move out from the immediate neighbors to find data.  
c This loop looks one behind and TWO ahead and performs the same calcs.

```
      if (itmp(i-1).ne.9999.and.itmp(i+2).ne.9999) then
          itmp(i)=int((itmp(i-1)+itmp(i+2))/2)
      else
```

c Following convention above, check one behind and THREE ahead.

```
      if (itmp(i-1).ne.9999.and.itmp(i+3).ne.9999) then
          itmp(i)=int((itmp(i-1)+itmp(i+3))/2)
      else
```

c If there still is no data, then if the previous obs is good, just  
c replace the missing obs with the previous hour.

```
      if (itmp(i-1).ne.9999) then
          itmp(i)=itmp(i-1)
      else
```

c If this still doesn't work, then replace the missing obs with the  
c data from four obs ahead.

```
      itmp(i)=itmp(i+4)
```

```
        end if
    end if
end if
end if
20 continue

do 30 i=1,icount
    read(8,101)a1,idum1,icode,a2
    if (icode.eq.9) then
        icode=1
    end if
    write(9,102)a1,itmp(i),icode,a2

c This SUM file contains the old TMP and new TMP for purposes of checking.

    write(10,103)a1,idum1,itmp(i)
30 continue

101 format(a60,i5,i1,a564)
102 format(a60,sp,i5.4,ss,i1,a564)
103 format(a60,sp,i5.4,i5.4)

end
```

```

HRFILL
c23456789
c This program fills missing hours in the raw data by repeating
c the previous hour. It only works for single missing hours.
c It is designed to be an IF-THEN-ELSE statement that works down the file.

character*23 a1(25000)
character*603 a2(25000)
character*12 name1
character*12 name2
integer hr(25000)

write(6,*)"Enter ISHD File "
read(5,'(a12)')name1
write(6,*)"Enter # of Records"
read(5,'(i5)')icount
write(6,*)"Enter Out File "
read(5,'(a12)')name2
open(unit=8,file=name1,status='old')
open(unit=9,file=name2,status='unknown')

c This loop brings the data into the arrays, then rewinds the file.

do 10 i=1,icount
    read(8,101)a1(i),hr(i),a2(i)
10 continue
    rewind(8)

c This is the interpolation loop. This one acts on single missing hour
c by repeating it, if there is only one missing hour.

icnt=icount-1
itmp=1
do 20 i=1,icnt

    itmp1=hr(i+1)-hr(i)
    if (itmp1.le.155) then
        write(9,102)a1(i),hr(i),a2(i)
        itmp=itmp+1
    else
        itmp2=hr(i)+100
        write(9,102)a1(i),hr(i),a2(i)
        write(9,102)a1(i),itmp2,a2(i)
        itmp=itmp+2
    end if

20 continue
    write(9,102)a1(icount),hr(icount),a2(icount)
    write(6,*)itmp

101 format(a23,i4,a603)
102 format(a23,i4.4,a603)

end

```

**HRFILL2**

```
c23456789
c This program fills missing hours in the raw data by repeating
c the previous and the following hours. It only works for two missing
c hours back-to-back. It is designed to be an IF-THEN-ELSE statement
c that works down the file.

character*23 a1(25000)
character*603 a2(25000)
character*10 name1
character*10 name2
integer hr(25000)

write(6,*)"Enter ISHD File "
read(5,'(a10)')name1
write(6,*)"Enter # of Records"
read(5,'(i5)')icount
write(6,*)"Enter Out File "
read(5,'(a10)')name2
open(unit=8,file=name1,status='old')
open(unit=9,file=name2,status='unknown')

c This loop brings the data into the arrays, then rewinds the file.

do 10 i=1,icount
    read(8,101)a1(i),hr(i),a2(i)
10 continue
    rewind(8)

c This is the interpolation loop. This checks for a gap of two hours,
c and copies the previous and following hours into the gap.

icnt=icount-1
do 20 i=1,icnt

    itmp1=hr(i+1)-hr(i)
    if (itmp1.le.255) then
        write(9,102)a1(i),hr(i),a2(i)
    else
        itmp2=hr(i)+100
        itmp3=hr(i+1)-100
        write(9,102)a1(i),hr(i),a2(i)
        write(9,102)a1(i),itmp2,a2(i)
        write(9,102)a1(i+1),itmp3,a2(i+1)
    end if

20 continue
    write(9,102)a1(icount),hr(icount),a2(icount)

101 format(a23,i4,a603)
102 format(a23,i4.4,a603)

end
```

### APPENDIX 3

#### Surface Stage 1 AERMET Input Files

JOB  
REPORT CLI02BS.RPT  
MESSAGES CLI02BS.MSG

SURFACE  
DATA CLI02B.ISH ISHD  
EXTRACT CLI02BSF.IQA  
AUDIT ASKY  
QAOOUT CLI02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 44.62N 88.71W 6

JOB  
REPORT DLH02BS.RPT  
MESSAGES DLH02BS.MSG

SURFACE  
DATA DLH02B.ISH ISHD  
EXTRACT DLH02BSF.IQA  
AUDIT ASKY  
QAOOUT DLH02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 14913 46.83N 92.22W 6

JOB  
REPORT EGV02BS.RPT  
MESSAGES EGV02BS.MSG

SURFACE  
DATA EGV02B.ISH ISHD  
EXTRACT EGV02BSF.IQA  
AUDIT ASKY  
QAOOUT EGV02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 45.94N 89.26W 6

JOB  
REPORT EAU02BS.RPT  
MESSAGES EAU02BS.MSG

SURFACE  
DATA EAU02B.ISH ISHD  
EXTRACT EAU02BSF.IQA  
AUDIT ASKY  
QAOOUT EAU02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 14991 44.87N 91.48W 6

JOB  
REPORT GRB02BS.RPT  
MESSAGES GRB02BS.MSG

SURFACE  
DATA GRB02B.ISH ISHD  
EXTRACT GRB02BSF.IQA  
AUDIT ASKY  
QAOOUT GRB02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 14898 44.88N 88.13W 6

JOB  
REPORT HYR02BS.RPT  
MESSAGES HYR02BS.MSG

SURFACE  
DATA HYR02B.ISH ISHD  
EXTRACT HYR02BSF.IQA  
AUDIT ASKY  
QAOUT HYR02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 46.03N 91.44W 6

JOB  
REPORT IMT02BS.RPT  
MESSAGES IMT02BS.MSG

SURFACE  
DATA IMT02B.ISH ISHD  
EXTRACT IMT02BSF.IQA  
AUDIT ASKY  
QAOUT IMT02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 45.82N 88.11W 6

JOB  
REPORT UNU02BS.RPT  
MESSAGES UNU02BS.MSG

SURFACE  
DATA UNU02B.ISH ISHD  
EXTRACT UNU02BSF.IQA  
AUDIT ASKY  
QAOUT UNU02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 43.43N 88.70W 6

JOB  
REPORT LSE02BS.RPT  
MESSAGES LSE02BS.MSG

SURFACE  
DATA LSE02B.ISH ISHD  
EXTRACT LSE02BSF.IQA  
AUDIT ASKY  
QAOUT LSE02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 14920 43.88N 91.25W 6

JOB  
REPORT MSN02BS.RPT  
MESSAGES MSN02BS.MSG

SURFACE  
DATA MSN02B.ISH ISHD  
EXTRACT MSN02BSF.IQA  
AUDIT ASKY  
QAOUT MSN02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 14837 43.13N 89.33W 6

JOB  
REPORT MTW02BS.RPT  
MESSAGES MTW02BS.MSG

SURFACE  
DATA MTW02B.ISH ISHD  
EXTRACT MTW02BSF.IQA  
AUDIT ASKY  
QAOUT MTW02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 44.13N 87.67W 6

JOB  
REPORT MFI02BS.RPT  
MESSAGES MFI02BS.MSG

SURFACE  
DATA MFI02B.ISH ISHD  
EXTRACT MFI02BSF.IQA  
AUDIT ASKY  
QAOUT MFI02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 44.64N 90.19W 6

JOB  
REPORT MKE02BS.RPT  
MESSAGES MKE02BS.MSG

SURFACE  
DATA MKE02B.ISH ISHD  
EXTRACT MKE02BSF.IQA  
AUDIT ASKY  
QAOUT MKE02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 14839 42.95N 87.90W 6

JOB  
REPORT CWA02BS.RPT  
MESSAGES CWA02BS.MSG

SURFACE  
DATA CWA02B.ISH ISHD  
EXTRACT CWA02BSF.IQA  
AUDIT ASKY  
QAOUT CWA02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 44.78N 89.67W 6

JOB  
REPORT OSH02BS.RPT  
MESSAGES OSH02BS.MSG

SURFACE  
DATA OSH02B.ISH ISHD  
EXTRACT OSH02BSF.IQA  
AUDIT ASKY  
QAOUT OSH02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 43.98N 88.56W 6

JOB  
REPORT RGK02BS.RPT  
MESSAGES RGK02BS.MSG

SURFACE  
DATA RGK02B.ISH ISHD  
EXTRACT RGK02BSF.IQA  
AUDIT ASKY  
QAOUT RGK02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 44.59N 92.48W 6

JOB  
REPORT RHI02BS.RPT  
MESSAGES RHI02BS.MSG

SURFACE  
DATA RHI02B.ISH ISHD  
EXTRACT RHI02BSF.IQA  
AUDIT ASKY  
QAOUT RHI02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 45.63N 89.47W 6

JOB  
REPORT SUE02BS.RPT  
MESSAGES SUE02BS.MSG

SURFACE  
DATA SUE02B.ISH ISHD  
EXTRACT SUE02BSF.IQA  
AUDIT ASKY  
QAOUT SUE02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 44.85N 87.42W 6

JOB  
REPORT AUW02BS.RPT  
MESSAGES AUW02BS.MSG

SURFACE  
DATA AUW02B.ISH ISHD  
EXTRACT AUW02BSF.IQA  
AUDIT ASKY  
QAOUT AUW02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 14897 44.93N 89.63W 6

JOB  
REPORT DLL02BS.RPT  
MESSAGES DLL02BS.MSG

SURFACE  
DATA DLL02B.ISH ISHD  
EXTRACT DLL02BSF.IQA  
AUDIT ASKY  
QAOUT DLL02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 43.52N 89.77W 6

JOB

REPORT ISW02BS.RPT  
MESSAGES ISW02BS.MSG

SURFACE

DATA ISW02B.ISH ISHD  
EXTRACT ISW02BSF.IQA  
AUDIT ASKY  
QAOOUT ISW02BSF.OQA  
XDATES 02/1/1 TO 03/1/1  
LOCATION 99999 44.36N 89.84W 6

## APPENDIX 4

### Stage 2 AERMET Input Files

JOB  
REPORT CLI02\_02.RPT  
MESSAGES CLI02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT CLI02BSF.OQA

MERGE  
OUTPUT CLI02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT DLH02\_02.RPT  
MESSAGES DLH02\_02.MSG

UPPERAIR  
QAOOUT MPX02\_UA.OQA

SURFACE  
QAOOUT DLH02BSF.OQA

MERGE  
OUTPUT DLH02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT EGV02\_02.RPT  
MESSAGES EGV02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT EGV02BSF.OQA

MERGE  
OUTPUT EGV02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT EAU02\_02.RPT  
MESSAGES EAU02\_02.MSG

UPPERAIR  
QAOOUT MPX02\_UA.OQA

SURFACE  
QAOOUT EAU02BSF.OQA

MERGE  
OUTPUT EAU02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT GRB02\_02.RPT  
MESSAGES GRB02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT GRB02BSF.OQA

MERGE  
OUTPUT GRB02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT HYR02\_02.RPT  
MESSAGES HYR02\_02.MSG

UPPERAIR  
QAOOUT mpx02\_UA.OQA

SURFACE  
QAOOUT HYR02BSF.OQA

MERGE  
OUTPUT HYR02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT IMT02\_02.RPT  
MESSAGES IMT02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT IMT02BSF.OQA

MERGE  
OUTPUT IMT02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT UNU02\_02.RPT  
MESSAGES UNU02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT UNU02BSF.OQA

MERGE  
OUTPUT UNU02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT LSE02\_02.RPT  
MESSAGES LSE02\_02.MSG

UPPERAIR  
QAOOUT MPX02\_UA.OQA

SURFACE  
QAOOUT LSE02BSF.OQA

MERGE  
OUTPUT LSE02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT MSN02\_02.RPT  
MESSAGES MSN02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT MSN02BSF.OQA

MERGE  
OUTPUT MSN02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT MTW02\_02.RPT  
MESSAGES MTW02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT MTW02BSF.OQA

MERGE  
OUTPUT MTW02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT MFI02\_02.RPT  
MESSAGES MFI02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT MFI02BSF.OQA

MERGE  
OUTPUT MFI02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT MKE02\_02.RPT  
MESSAGES MKE02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT MKE02BSF.OQA

MERGE  
OUTPUT MKE02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT CWA02\_02.RPT  
MESSAGES CWA02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT CWA02BSF.OQA

MERGE  
OUTPUT CWA02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT OSH02\_02.RPT  
MESSAGES OSH02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT OSH02BSF.OQA

MERGE  
OUTPUT OSH02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT RGK02\_02.RPT  
MESSAGES RGK02\_02.MSG

UPPERAIR  
QAOOUT MPX02\_UA.OQA

SURFACE  
QAOOUT RGK02BSF.OQA

MERGE  
OUTPUT RGK02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT RHI02\_02.RPT  
MESSAGES RHI02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT RHI02BSF.OQA

MERGE  
OUTPUT RHI02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT SUE02\_02.RPT  
MESSAGES SUE02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT SUE02BSF.OQA

MERGE  
OUTPUT SUE02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT AUW02\_02.RPT  
MESSAGES AUW02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT AUW02BSF.OQA

MERGE  
OUTPUT AUW02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT DLL02\_02.RPT  
MESSAGES DLL02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT DLL02BSF.OQA

MERGE  
OUTPUT DLL02\_MR.MET  
XDATES 02/01/01 02/12/31

JOB  
REPORT ISW02\_02.RPT  
MESSAGES ISW02\_02.MSG

UPPERAIR  
QAOOUT GRB02\_UA.OQA

SURFACE  
QAOOUT ISW02BSF.OQA

MERGE  
OUTPUT ISW02\_MR.MET  
XDATES 02/01/01 02/12/31

## APPENDIX 5

### Land Use Lookup Tables

Land Use Code	Roughne Spring	Roughne Summer	Roughne Autumn	Roughne Winter	Bowen Spring	Bowen Summer	Bowen Autumn	Bowen Winter	Albedo Spring	Albedo Summer	Albedo Autumn	Albedo Winter
0	0.0001	0.0001	0.0001	0.0001	0.1	0.1	0.1	1.5	0.12	0.1	0.14	0.2
11	0.6	0.6	0.6	0.6	1	2	2	1.5	0.14	0.16	0.18	0.35
12	1	1	1	1	1	2	2	1.5	0.14	0.16	0.18	0.35
13	1	1	1	1	1	2	2	1.5	0.14	0.16	0.18	0.35
14	0.1	0.1	0.1	0.1	1	2	2	1.5	0.14	0.16	0.18	0.35
15	1	1	1	1	1	2	2	1.5	0.14	0.16	0.18	0.35
16	0.6	0.6	0.6	0.6	1	2	2	1.5	0.14	0.16	0.18	0.35
17	0.6	0.6	0.6	0.6	1	2	2	1.5	0.14	0.16	0.18	0.35
21	0.03	0.2	0.05	0.01	0.3	0.5	0.7	1.5	0.14	0.2	0.18	0.6
22	1	1.3	0.8	0.5	0.3	0.5	0.7	1.5	0.14	0.2	0.18	0.6
23	0.03	0.2	0.05	0.01	0.3	0.5	0.7	1.5	0.14	0.2	0.18	0.6
24	0.03	0.2	0.05	0.01	0.3	0.5	0.7	1.5	0.14	0.2	0.18	0.6
31	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6
32	0.3	0.3	0.3	0.15	3	4	6	6	0.3	0.28	0.28	0.45
33	0.3	0.3	0.3	0.15	3	4	6	6	0.3	0.28	0.28	0.45
41	1	1.3	0.8	0.5	0.7	0.3	1	1.5	0.12	0.12	0.12	0.5
42	1.3	1.3	1.3	1.3	0.7	0.3	0.8	1.5	0.12	0.12	0.12	0.35
43	1.3	1.3	1.3	1.3	0.7	0.3	0.8	1.5	0.12	0.12	0.12	0.35
51	0.0001	0.0001	0.0001	0.0001	0.1	0.1	0.1	1.5	0.12	0.1	0.14	0.2
52	0.0001	0.0001	0.0001	0.0001	0.1	0.1	0.1	1.5	0.12	0.1	0.14	0.2
53	0.0001	0.0001	0.0001	0.0001	0.1	0.1	0.1	1.5	0.12	0.1	0.14	0.2
54	0.0001	0.0001	0.0001	0.0001	0.1	0.1	0.1	1.5	0.12	0.1	0.14	0.2
61	1	1.3	0.8	0.5	0.7	0.3	1	1.5	0.12	0.12	0.12	0.5
62	0.2	0.2	0.2	0.05	0.1	0.1	0.1	1.5	0.12	0.14	0.16	0.3
71	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6
72	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6
73	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6
74	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6
75	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6
76	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6
77	0.05	0.1	0.01	0.001	0.4	0.8	1	1.5	0.18	0.18	0.2	0.6

<b>Land Use Codes</b> (following Anderson Level 2 Classification)			
Code	Definition	Code	Definition
11	Residential	42	Evergreen Forest Land
12	Commercial Services	43	Mixed Forest Land
13	Industrial	51	Streams and Canals
14	Transportation, Communication	52	Lakes
15	Industrial and Commercial	52	Reservoirs
16	Mixed Urban or Built-Up Land	53	Bays and Estuaries
17	Other Urban or Built-Up Land	61	Forested Wetland
21	Cropland and Pasture	62	Non-forested Wetland
22	Orchards, Groves, Vineyard, Nursery	71	Dry Salt Flats
23	Confined Feeding Operations	72	Beaches
24	Other Agricultural Land	73	Sandy (non-beach)
31	Herbaceous Range Land	74	Bare Exposed Rock
32	Shrub and Brush Range Land	75	Strip Mines, Quarries, Gravel Pits
33	Mixed Range Land	76	Transitional Areas
41	Deciduous Forest Land	77	Mixed Barren Land

## APPENDIX 6

### Stage 3 AERMET Input Files

```
JOB
REPORT    CLI02_03.RPT
MESSAGES  CLI02_03.MSG

METPREP
DATA      CLI02_MR.MET

OUTPUT    CLI02.SFC
PROFILE   CLI02.PFL

LOCATION  CLINTVLE 88.71W 44.62N 6

METHOD    REFLEVEL  SUBNWS
METHOD    WIND_DIR  RANDOM
NWS_HGT   WIND      10.0
FREQ_SECT SEASONAL 12
SECTOR    1 15      45
SECTOR    2 45      75
SECTOR    3 75      105
SECTOR   4 105     135
SECTOR   5 135     165
SECTOR   6 165     195
SECTOR   7 195     225
SECTOR   8 225     255
SECTOR   9 255     285
SECTOR  10 285     315
SECTOR  11 315     345
SECTOR  12 345     15
SITE_CHAR 1 1 0.60  1.5  0.01
SITE_CHAR 2 1 0.14  0.3  0.03
SITE_CHAR 3 1 0.20  0.5  0.2
SITE_CHAR 4 1 0.18  0.7  0.05
SITE_CHAR 1 2 0.60  1.5  0.01
SITE_CHAR 2 2 0.14  0.4  0.05
SITE_CHAR 3 2 0.18  0.5  0.2
SITE_CHAR 4 2 0.18  0.8  0.05
SITE_CHAR 1 3 0.60  1.5  0.01
SITE_CHAR 2 3 0.14  0.3  0.03
SITE_CHAR 3 3 0.18  0.5  0.2
SITE_CHAR 4 3 0.18  0.7  0.05
SITE_CHAR 1 4 0.60  1.5  0.01
SITE_CHAR 2 4 0.14  0.4  0.05
SITE_CHAR 3 4 0.18  0.5  0.2
SITE_CHAR 4 4 0.18  0.8  0.05
SITE_CHAR 1 5 0.35  1.5  0.1
SITE_CHAR 2 5 0.14  0.7  0.1
SITE_CHAR 3 5 0.16  0.5  0.2
SITE_CHAR 4 5 0.18  0.8  0.1
SITE_CHAR 1 6 0.35  1.5  0.1
SITE_CHAR 2 6 0.14  0.7  0.1
SITE_CHAR 3 6 0.16  0.8  0.2
SITE_CHAR 4 6 0.18  1.0  0.1
SITE_CHAR 1 7 0.35  1.5  0.1
SITE_CHAR 2 7 0.14  0.7  0.1
SITE_CHAR 3 7 0.16  0.8  0.2
SITE_CHAR 4 7 0.18  1.0  0.1
SITE_CHAR 1 8 0.60  1.5  0.01
SITE_CHAR 2 8 0.14  0.4  0.05
SITE_CHAR 3 8 0.20  0.5  0.2
SITE_CHAR 4 8 0.18  0.8  0.05
SITE_CHAR 1 9 0.35  1.5  0.1
SITE_CHAR 2 9 0.14  1.0  0.1
SITE_CHAR 3 9 0.16  2.0  0.2
SITE_CHAR 4 9 0.18  2.0  0.1
SITE_CHAR 1 10 0.35  1.5  0.1
SITE_CHAR 2 10 0.14  1.0  0.1
SITE_CHAR 3 10 0.16  2.0  0.2
SITE_CHAR 4 10 0.18  2.0  0.1
SITE_CHAR 1 11 0.35  1.5  0.1
SITE_CHAR 2 11 0.14  0.7  0.1
SITE_CHAR 3 11 0.16  0.8  0.1
SITE_CHAR 4 11 0.18  1.0  0.1
SITE_CHAR 1 12 0.60  1.5  0.01
SITE_CHAR 2 12 0.14  0.4  0.05
SITE_CHAR 3 12 0.18  0.5  0.2
SITE_CHAR 4 12 0.18  0.8  0.05
```

JOB REPORT DLH02\_03.RPT  
 MESSAGES DLH02\_03.MSG  
 METPREP  
 DATA DLH02\_MR.MET  
 OUTPUT DLH02.SFC  
 PROFILE DLH02.PFL  
 LOCATION DULUTH 92.22W 46.83N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 1.0  
 SITE\_CHAR 2 1 0.14 1.0 1.0  
 SITE\_CHAR 3 1 0.16 2.0 1.0  
 SITE\_CHAR 4 1 0.18 2.0 1.0  
 SITE\_CHAR 1 2 0.50 1.5 0.05  
 SITE\_CHAR 2 2 0.14 0.4 0.2  
 SITE\_CHAR 3 2 0.16 0.8 0.2  
 SITE\_CHAR 4 2 0.18 1.0 0.2  
 SITE\_CHAR 1 3 0.50 1.5 0.5  
 SITE\_CHAR 2 3 0.14 0.7 1.0  
 SITE\_CHAR 3 3 0.16 0.8 1.0  
 SITE\_CHAR 4 3 0.18 1.0 0.8  
 SITE\_CHAR 1 4 0.60 1.5 0.001  
 SITE\_CHAR 2 4 0.18 0.4 0.05  
 SITE\_CHAR 3 4 0.18 0.8 0.1  
 SITE\_CHAR 4 4 0.20 1.0 0.01  
 SITE\_CHAR 1 5 0.60 1.5 0.001  
 SITE\_CHAR 2 5 0.18 0.4 0.05  
 SITE\_CHAR 3 5 0.18 0.8 0.1  
 SITE\_CHAR 4 5 0.20 1.0 0.01  
 SITE\_CHAR 1 6 0.50 1.5 0.5  
 SITE\_CHAR 2 6 0.14 0.7 0.6  
 SITE\_CHAR 3 6 0.16 0.8 0.6  
 SITE\_CHAR 4 6 0.18 1.0 0.6  
 SITE\_CHAR 1 7 0.60 1.5 0.001  
 SITE\_CHAR 2 7 0.18 0.4 0.05  
 SITE\_CHAR 3 7 0.18 0.8 0.1  
 SITE\_CHAR 4 7 0.20 1.0 0.01  
 SITE\_CHAR 1 8 0.50 1.5 0.5  
 SITE\_CHAR 2 8 0.14 0.7 1.0  
 SITE\_CHAR 3 8 0.16 0.8 1.0  
 SITE\_CHAR 4 8 0.18 1.0 0.8  
 SITE\_CHAR 1 9 0.35 1.5 1.0  
 SITE\_CHAR 2 9 0.14 1.0 1.0  
 SITE\_CHAR 3 9 0.16 2.0 1.0  
 SITE\_CHAR 4 9 0.18 2.0 1.0  
 SITE\_CHAR 1 10 0.35 1.5 1.0  
 SITE\_CHAR 2 10 0.14 1.0 1.0  
 SITE\_CHAR 3 10 0.16 2.0 1.0  
 SITE\_CHAR 4 10 0.18 2.0 1.0  
 SITE\_CHAR 1 11 0.35 1.5 0.5  
 SITE\_CHAR 2 11 0.12 0.7 1.0  
 SITE\_CHAR 3 11 0.14 0.3 1.0  
 SITE\_CHAR 4 11 0.16 1.0 0.8  
 SITE\_CHAR 1 12 0.35 1.5 0.5  
 SITE\_CHAR 2 12 0.14 0.7 1.0  
 SITE\_CHAR 3 12 0.16 0.8 1.0  
 SITE\_CHAR 4 12 0.18 1.0 0.8

JOB REPORT EGV02\_03.RPT  
 MESSAGES EGV02\_03.MSG  
 METPREP  
 DATA EGV02\_MR.MET  
 OUTPUT EGV02.SFC  
 PROFILE EGV02.PFL  
 LOCATION EAGLERIV 89.26W 45.94N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 1.3  
 SITE\_CHAR 2 1 0.12 0.7 1.3  
 SITE\_CHAR 3 1 0.12 0.3 1.3  
 SITE\_CHAR 4 1 0.12 0.8 1.3  
 SITE\_CHAR 1 2 0.35 1.5 1.0  
 SITE\_CHAR 2 2 0.12 0.7 1.0  
 SITE\_CHAR 3 2 0.14 0.3 1.0  
 SITE\_CHAR 4 2 0.16 0.8 1.0  
 SITE\_CHAR 1 3 0.35 1.5 0.6  
 SITE\_CHAR 2 3 0.14 1.0 0.6  
 SITE\_CHAR 3 3 0.16 2.0 0.6  
 SITE\_CHAR 4 3 0.18 2.0 0.6  
 SITE\_CHAR 1 4 0.35 1.5 0.6  
 SITE\_CHAR 2 4 0.14 1.0 0.6  
 SITE\_CHAR 3 4 0.16 2.0 0.6  
 SITE\_CHAR 4 4 0.18 2.0 0.6  
 SITE\_CHAR 1 5 0.35 1.5 1.0  
 SITE\_CHAR 2 5 0.14 1.0 1.0  
 SITE\_CHAR 3 5 0.16 2.0 1.0  
 SITE\_CHAR 4 5 0.18 2.0 1.0  
 SITE\_CHAR 1 6 0.35 1.5 1.0  
 SITE\_CHAR 2 6 0.14 1.0 1.0  
 SITE\_CHAR 3 6 0.16 2.0 1.0  
 SITE\_CHAR 4 6 0.18 2.0 1.0  
 SITE\_CHAR 1 7 0.35 1.5 1.0  
 SITE\_CHAR 2 7 0.14 1.0 1.0  
 SITE\_CHAR 3 7 0.16 2.0 1.0  
 SITE\_CHAR 4 7 0.18 2.0 1.0  
 SITE\_CHAR 1 8 0.35 1.5 1.0  
 SITE\_CHAR 2 8 0.14 1.0 1.0  
 SITE\_CHAR 3 8 0.16 2.0 1.0  
 SITE\_CHAR 4 8 0.18 2.0 1.0  
 SITE\_CHAR 1 9 0.35 1.5 1.0  
 SITE\_CHAR 2 9 0.12 0.7 1.0  
 SITE\_CHAR 3 9 0.14 0.3 1.0  
 SITE\_CHAR 4 9 0.16 0.8 1.0  
 SITE\_CHAR 1 10 0.35 1.5 0.6  
 SITE\_CHAR 2 10 0.14 0.7 0.6  
 SITE\_CHAR 3 10 0.16 0.5 0.6  
 SITE\_CHAR 4 10 0.18 0.8 0.6  
 SITE\_CHAR 1 11 0.35 1.5 0.1  
 SITE\_CHAR 2 11 0.12 0.7 0.2  
 SITE\_CHAR 3 11 0.14 0.3 0.2  
 SITE\_CHAR 4 11 0.16 0.8 0.2  
 SITE\_CHAR 1 12 0.35 1.5 1.0  
 SITE\_CHAR 2 12 0.12 0.7 1.0  
 SITE\_CHAR 3 12 0.12 0.3 1.0  
 SITE\_CHAR 4 12 0.14 0.8 1.0

JOB REPORT EAU02\_03.RPT  
 MESSAGES EAU02\_03.MSG  
 METPREP  
 DATA EAU02\_MR.MET  
 OUTPUT EAU02.SFC  
 PROFILE EAU02.PFL  
 LOCATION EAUCLAIR 91.48W 44.87N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.1  
 SITE\_CHAR 2 1 0.14 0.7 0.1  
 SITE\_CHAR 3 1 0.16 0.8 0.1  
 SITE\_CHAR 4 1 0.18 1.0 0.1  
 SITE\_CHAR 1 2 0.35 1.5 0.1  
 SITE\_CHAR 2 2 0.14 1.0 0.1  
 SITE\_CHAR 3 2 0.16 2.0 0.1  
 SITE\_CHAR 4 2 0.18 2.0 0.1  
 SITE\_CHAR 1 3 0.35 1.5 1.0  
 SITE\_CHAR 2 3 0.14 1.0 1.0  
 SITE\_CHAR 3 3 0.16 2.0 1.0  
 SITE\_CHAR 4 3 0.18 2.0 1.0  
 SITE\_CHAR 1 4 0.35 1.5 0.6  
 SITE\_CHAR 2 4 0.14 1.0 0.6  
 SITE\_CHAR 3 4 0.16 2.0 0.6  
 SITE\_CHAR 4 4 0.18 2.0 0.6  
 SITE\_CHAR 1 5 0.35 1.5 0.1  
 SITE\_CHAR 2 5 0.14 1.0 0.1  
 SITE\_CHAR 3 5 0.16 2.0 0.1  
 SITE\_CHAR 4 5 0.18 2.0 0.1  
 SITE\_CHAR 1 6 0.35 1.5 0.1  
 SITE\_CHAR 2 6 0.14 1.0 0.1  
 SITE\_CHAR 3 6 0.16 2.0 0.1  
 SITE\_CHAR 4 6 0.18 2.0 0.1  
 SITE\_CHAR 1 7 0.35 1.5 0.1  
 SITE\_CHAR 2 7 0.14 1.0 0.1  
 SITE\_CHAR 3 7 0.16 2.0 0.1  
 SITE\_CHAR 4 7 0.18 2.0 0.1  
 SITE\_CHAR 1 8 0.35 1.5 0.6  
 SITE\_CHAR 2 8 0.14 1.0 0.6  
 SITE\_CHAR 3 8 0.16 2.0 0.6  
 SITE\_CHAR 4 8 0.18 2.0 0.6  
 SITE\_CHAR 1 9 0.35 1.5 0.1  
 SITE\_CHAR 2 9 0.14 1.0 0.1  
 SITE\_CHAR 3 9 0.16 2.0 0.2  
 SITE\_CHAR 4 9 0.18 2.0 0.1  
 SITE\_CHAR 1 10 0.60 1.5 0.01  
 SITE\_CHAR 2 10 0.14 0.3 0.03  
 SITE\_CHAR 3 10 0.20 0.5 0.2  
 SITE\_CHAR 4 10 0.18 0.7 0.05  
 SITE\_CHAR 1 11 0.35 1.5 0.1  
 SITE\_CHAR 2 11 0.14 0.7 0.1  
 SITE\_CHAR 3 11 0.16 0.5 0.2  
 SITE\_CHAR 4 11 0.18 1.0 0.1  
 SITE\_CHAR 1 12 0.50 1.5 0.1  
 SITE\_CHAR 2 12 0.14 0.7 0.1  
 SITE\_CHAR 3 12 0.16 0.5 0.2  
 SITE\_CHAR 4 12 0.18 1.0 0.1

JOB REPORT GRB02\_03.RPT  
 MESSAGES GRB02\_03.MSG  
 METPREP  
 DATA GRB02\_MR.MET  
 OUTPUT GRB02.SFC  
 PROFILE GRB02.PFL  
 LOCATION GREENBAY 88.13W 44.88N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.1  
 SITE\_CHAR 2 1 0.14 1.0 0.1  
 SITE\_CHAR 3 1 0.16 2.0 0.1  
 SITE\_CHAR 4 1 0.18 2.0 0.1  
 SITE\_CHAR 1 2 0.35 1.5 0.1  
 SITE\_CHAR 2 2 0.14 1.0 0.1  
 SITE\_CHAR 3 2 0.16 2.0 0.1  
 SITE\_CHAR 4 2 0.18 2.0 0.1  
 SITE\_CHAR 1 3 0.35 1.5 0.1  
 SITE\_CHAR 2 3 0.14 1.0 0.1  
 SITE\_CHAR 3 3 0.16 2.0 0.2  
 SITE\_CHAR 4 3 0.18 2.0 0.1  
 SITE\_CHAR 1 4 0.35 1.5 0.1  
 SITE\_CHAR 2 4 0.14 1.0 0.1  
 SITE\_CHAR 3 4 0.16 2.0 0.2  
 SITE\_CHAR 4 4 0.18 2.0 0.1  
 SITE\_CHAR 1 5 0.35 1.5 0.1  
 SITE\_CHAR 2 5 0.14 1.0 0.1  
 SITE\_CHAR 3 5 0.16 2.0 0.2  
 SITE\_CHAR 4 5 0.18 2.0 0.1  
 SITE\_CHAR 1 6 0.60 1.5 0.01  
 SITE\_CHAR 2 6 0.14 0.3 0.03  
 SITE\_CHAR 3 6 0.20 0.5 0.2  
 SITE\_CHAR 4 6 0.18 0.7 0.05  
 SITE\_CHAR 1 7 0.60 1.5 0.01  
 SITE\_CHAR 2 7 0.14 0.3 0.03  
 SITE\_CHAR 3 7 0.20 0.5 0.2  
 SITE\_CHAR 4 7 0.18 0.7 0.05  
 SITE\_CHAR 1 8 0.60 1.5 0.01  
 SITE\_CHAR 2 8 0.14 0.3 0.03  
 SITE\_CHAR 3 8 0.20 0.5 0.2  
 SITE\_CHAR 4 8 0.18 0.7 0.05  
 SITE\_CHAR 1 9 0.60 1.5 0.01  
 SITE\_CHAR 2 9 0.14 0.3 0.03  
 SITE\_CHAR 3 9 0.20 0.5 0.2  
 SITE\_CHAR 4 9 0.18 0.7 0.05  
 SITE\_CHAR 1 10 0.60 1.5 0.01  
 SITE\_CHAR 2 10 0.14 0.3 0.03  
 SITE\_CHAR 3 10 0.20 0.5 0.2  
 SITE\_CHAR 4 10 0.18 0.7 0.05  
 SITE\_CHAR 1 11 0.60 1.5 0.01  
 SITE\_CHAR 2 11 0.14 0.3 0.03  
 SITE\_CHAR 3 11 0.20 0.5 0.2  
 SITE\_CHAR 4 11 0.18 0.7 0.05  
 SITE\_CHAR 1 12 0.50 1.5 0.1  
 SITE\_CHAR 2 12 0.14 0.7 0.1  
 SITE\_CHAR 3 12 0.16 0.8 0.1  
 SITE\_CHAR 4 12 0.18 1.0 0.1

JOB REPORT HYR02\_03.RPT  
 MESSAGES HYR02\_03.MSG  
 METPREP  
 DATA HYR02\_MR.MET  
 OUTPUT HYR02.SFC  
 PROFILE HYR02.PFL  
 LOCATION HAYWARD 91.44W 46.03N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 1.3  
 SITE\_CHAR 2 1 0.12 0.7 1.3  
 SITE\_CHAR 3 1 0.12 0.3 1.3  
 SITE\_CHAR 4 1 0.12 0.8 1.3  
 SITE\_CHAR 1 2 0.35 1.5 1.3  
 SITE\_CHAR 2 2 0.12 0.7 1.3  
 SITE\_CHAR 3 2 0.12 0.3 1.3  
 SITE\_CHAR 4 2 0.12 0.8 1.3  
 SITE\_CHAR 1 3 0.35 1.5 1.3  
 SITE\_CHAR 2 3 0.12 0.7 1.3  
 SITE\_CHAR 3 3 0.12 0.3 1.3  
 SITE\_CHAR 4 3 0.12 0.8 1.3  
 SITE\_CHAR 1 4 0.35 1.5 1.3  
 SITE\_CHAR 2 4 0.12 0.7 1.3  
 SITE\_CHAR 3 4 0.12 0.3 1.3  
 SITE\_CHAR 4 4 0.12 0.8 1.3  
 SITE\_CHAR 1 5 0.35 1.5 1.3  
 SITE\_CHAR 2 5 0.12 0.7 1.3  
 SITE\_CHAR 3 5 0.12 0.3 1.3  
 SITE\_CHAR 4 5 0.12 0.8 1.3  
 SITE\_CHAR 1 6 0.35 1.5 1.3  
 SITE\_CHAR 2 6 0.12 0.7 1.3  
 SITE\_CHAR 3 6 0.12 0.3 1.3  
 SITE\_CHAR 4 6 0.12 0.8 1.3  
 SITE\_CHAR 1 7 0.35 1.5 0.6  
 SITE\_CHAR 2 7 0.12 0.7 0.6  
 SITE\_CHAR 3 7 0.12 0.3 0.6  
 SITE\_CHAR 4 7 0.14 0.8 0.6  
 SITE\_CHAR 1 8 0.35 1.5 0.6  
 SITE\_CHAR 2 8 0.14 0.7 0.6  
 SITE\_CHAR 3 8 0.16 0.5 0.6  
 SITE\_CHAR 4 8 0.18 0.8 0.6  
 SITE\_CHAR 1 9 0.35 1.5 1.3  
 SITE\_CHAR 2 9 0.12 0.7 1.3  
 SITE\_CHAR 3 9 0.12 0.3 1.3  
 SITE\_CHAR 4 9 0.12 0.8 1.3  
 SITE\_CHAR 1 10 0.35 1.5 1.3  
 SITE\_CHAR 2 10 0.12 0.7 1.3  
 SITE\_CHAR 3 10 0.12 0.3 1.3  
 SITE\_CHAR 4 10 0.12 0.8 1.3  
 SITE\_CHAR 1 11 0.35 1.5 1.3  
 SITE\_CHAR 2 11 0.12 0.7 1.3  
 SITE\_CHAR 3 11 0.12 0.3 1.3  
 SITE\_CHAR 4 11 0.12 0.8 1.3  
 SITE\_CHAR 1 12 0.35 1.5 1.3  
 SITE\_CHAR 2 12 0.12 0.7 1.3  
 SITE\_CHAR 3 12 0.12 0.3 1.3  
 SITE\_CHAR 4 12 0.12 0.8 1.3

JOB REPORT IMT02\_03.RPT  
 MESSAGES IMT02\_03.MSG  
 METPREP  
 DATA IMT02\_MR.MET  
 OUTPUT IMT02.SFC  
 PROFILE IMT02.PFL  
 LOCATION IRONMTN 88.11W 45.82N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.1  
 SITE\_CHAR 2 1 0.14 0.7 0.1  
 SITE\_CHAR 3 1 0.16 0.5 0.2  
 SITE\_CHAR 4 1 0.18 0.8 0.1  
 SITE\_CHAR 1 2 0.35 1.5 1.3  
 SITE\_CHAR 2 2 0.12 0.7 1.3  
 SITE\_CHAR 3 2 0.12 0.3 1.3  
 SITE\_CHAR 4 2 0.12 0.8 1.3  
 SITE\_CHAR 1 3 0.35 1.5 0.6  
 SITE\_CHAR 2 3 0.14 1.0 0.6  
 SITE\_CHAR 3 3 0.16 2.0 0.6  
 SITE\_CHAR 4 3 0.18 2.0 0.6  
 SITE\_CHAR 1 4 0.35 1.5 0.6  
 SITE\_CHAR 2 4 0.14 1.0 0.6  
 SITE\_CHAR 3 4 0.16 2.0 0.6  
 SITE\_CHAR 4 4 0.18 2.0 0.6  
 SITE\_CHAR 1 5 0.35 1.5 1.3  
 SITE\_CHAR 2 5 0.12 0.7 1.3  
 SITE\_CHAR 3 5 0.12 0.3 1.3  
 SITE\_CHAR 4 5 0.12 0.8 1.3  
 SITE\_CHAR 1 6 0.35 1.5 0.1  
 SITE\_CHAR 2 6 0.14 0.7 0.1  
 SITE\_CHAR 3 6 0.16 0.5 0.1  
 SITE\_CHAR 4 6 0.18 0.8 0.1  
 SITE\_CHAR 1 7 0.35 1.5 0.1  
 SITE\_CHAR 2 7 0.12 0.7 0.1  
 SITE\_CHAR 3 7 0.12 0.3 0.2  
 SITE\_CHAR 4 7 0.14 0.8 0.1  
 SITE\_CHAR 1 8 0.35 1.5 1.3  
 SITE\_CHAR 2 8 0.12 0.7 1.3  
 SITE\_CHAR 3 8 0.12 0.3 1.3  
 SITE\_CHAR 4 8 0.12 0.8 1.3  
 SITE\_CHAR 1 9 0.35 1.5 1.3  
 SITE\_CHAR 2 9 0.12 0.7 1.3  
 SITE\_CHAR 3 9 0.12 0.3 1.3  
 SITE\_CHAR 4 9 0.12 0.8 1.3  
 SITE\_CHAR 1 10 0.35 1.5 0.5  
 SITE\_CHAR 2 10 0.12 0.7 1.0  
 SITE\_CHAR 3 10 0.12 0.3 1.3  
 SITE\_CHAR 4 10 0.12 1.0 0.8  
 SITE\_CHAR 1 11 0.35 1.5 1.3  
 SITE\_CHAR 2 11 0.12 0.7 1.3  
 SITE\_CHAR 3 11 0.12 0.3 1.3  
 SITE\_CHAR 4 11 0.12 0.8 1.3  
 SITE\_CHAR 1 12 0.35 1.5 1.3  
 SITE\_CHAR 2 12 0.12 0.7 1.3  
 SITE\_CHAR 3 12 0.12 0.3 1.3  
 SITE\_CHAR 4 12 0.12 0.8 1.3

JOB REPORT UNU02\_03.RPT  
 MESSAGES UNU02\_03.MSG  
 METPREP  
 DATA UNU02\_MR.MET  
 OUTPUT UNU02.SFC  
 PROFILE UNU02.PFL  
 LOCATION WATERTWN 88.70W 43.43N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.60 1.5 0.01  
 SITE\_CHAR 2 1 0.14 0.3 0.03  
 SITE\_CHAR 3 1 0.20 0.5 0.2  
 SITE\_CHAR 4 1 0.18 0.7 0.05  
 SITE\_CHAR 1 2 0.60 1.5 0.01  
 SITE\_CHAR 2 2 0.14 0.3 0.03  
 SITE\_CHAR 3 2 0.20 0.5 0.2  
 SITE\_CHAR 4 2 0.18 0.7 0.05  
 SITE\_CHAR 1 3 0.60 1.5 0.01  
 SITE\_CHAR 2 3 0.14 0.3 0.03  
 SITE\_CHAR 3 3 0.20 0.5 0.2  
 SITE\_CHAR 4 3 0.18 0.7 0.05  
 SITE\_CHAR 1 4 0.60 1.5 0.01  
 SITE\_CHAR 2 4 0.14 0.3 0.03  
 SITE\_CHAR 3 4 0.20 0.5 0.2  
 SITE\_CHAR 4 4 0.18 0.7 0.05  
 SITE\_CHAR 1 5 0.60 1.5 0.01  
 SITE\_CHAR 2 5 0.14 0.3 0.03  
 SITE\_CHAR 3 5 0.20 0.5 0.2  
 SITE\_CHAR 4 5 0.18 0.7 0.05  
 SITE\_CHAR 1 6 0.60 1.5 0.01  
 SITE\_CHAR 2 6 0.14 0.3 0.03  
 SITE\_CHAR 3 6 0.20 0.5 0.2  
 SITE\_CHAR 4 6 0.18 0.7 0.05  
 SITE\_CHAR 1 7 0.60 1.5 0.01  
 SITE\_CHAR 2 7 0.14 0.3 0.03  
 SITE\_CHAR 3 7 0.20 0.5 0.2  
 SITE\_CHAR 4 7 0.18 0.7 0.05  
 SITE\_CHAR 1 8 0.60 1.5 0.01  
 SITE\_CHAR 2 8 0.14 0.3 0.03  
 SITE\_CHAR 3 8 0.20 0.5 0.2  
 SITE\_CHAR 4 8 0.18 0.7 0.05  
 SITE\_CHAR 1 9 0.60 1.5 0.01  
 SITE\_CHAR 2 9 0.14 0.3 0.03  
 SITE\_CHAR 3 9 0.20 0.5 0.2  
 SITE\_CHAR 4 9 0.18 0.7 0.05  
 SITE\_CHAR 1 10 0.60 1.5 0.01  
 SITE\_CHAR 2 10 0.14 0.3 0.03  
 SITE\_CHAR 3 10 0.20 0.5 0.2  
 SITE\_CHAR 4 10 0.18 0.7 0.05  
 SITE\_CHAR 1 11 0.60 1.5 0.01  
 SITE\_CHAR 2 11 0.14 0.3 0.03  
 SITE\_CHAR 3 11 0.20 0.5 0.2  
 SITE\_CHAR 4 11 0.18 0.7 0.05  
 SITE\_CHAR 1 12 0.60 1.5 0.01  
 SITE\_CHAR 2 12 0.14 0.3 0.03  
 SITE\_CHAR 3 12 0.20 0.5 0.2  
 SITE\_CHAR 4 12 0.18 0.7 0.05

JOB REPORT LSE02\_03.RPT  
 MESSAGES LSE02\_03.MSG  
 METPREP  
 DATA LSE02\_MR.MET  
 OUTPUT LSE02.SFC  
 PROFILE LSE02.PFL  
 LOCATION LACROSSE 91.25W 43.88N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.1  
 SITE\_CHAR 2 1 0.14 1.0 0.1  
 SITE\_CHAR 3 1 0.16 2.0 0.1  
 SITE\_CHAR 4 1 0.18 2.0 0.1  
 SITE\_CHAR 1 2 0.35 1.5 0.6  
 SITE\_CHAR 2 2 0.14 1.0 0.6  
 SITE\_CHAR 3 2 0.16 2.0 0.6  
 SITE\_CHAR 4 2 0.18 2.0 0.6  
 SITE\_CHAR 1 3 0.35 1.5 0.6  
 SITE\_CHAR 2 3 0.14 1.0 0.6  
 SITE\_CHAR 3 3 0.16 2.0 0.6  
 SITE\_CHAR 4 3 0.18 2.0 0.6  
 SITE\_CHAR 1 4 0.35 1.5 0.1  
 SITE\_CHAR 2 4 0.14 1.0 0.1  
 SITE\_CHAR 3 4 0.16 2.0 0.1  
 SITE\_CHAR 4 4 0.18 2.0 0.1  
 SITE\_CHAR 1 5 0.35 1.5 0.1  
 SITE\_CHAR 2 5 0.14 1.0 0.1  
 SITE\_CHAR 3 5 0.16 2.0 0.1  
 SITE\_CHAR 4 5 0.18 2.0 0.1  
 SITE\_CHAR 1 6 0.35 1.5 0.1  
 SITE\_CHAR 2 6 0.14 1.0 0.1  
 SITE\_CHAR 3 6 0.16 2.0 0.1  
 SITE\_CHAR 4 6 0.18 2.0 0.1  
 SITE\_CHAR 1 7 0.35 1.5 0.1  
 SITE\_CHAR 2 7 0.14 1.0 0.1  
 SITE\_CHAR 3 7 0.16 2.0 0.1  
 SITE\_CHAR 4 7 0.18 2.0 0.1  
 SITE\_CHAR 1 8 0.35 1.5 0.5  
 SITE\_CHAR 2 8 0.14 1.0 0.6  
 SITE\_CHAR 3 8 0.16 2.0 0.6  
 SITE\_CHAR 4 8 0.18 2.0 0.6  
 SITE\_CHAR 1 9 0.35 1.5 0.1  
 SITE\_CHAR 2 9 0.14 1.0 0.1  
 SITE\_CHAR 3 9 0.16 2.0 0.1  
 SITE\_CHAR 4 9 0.18 2.0 0.1  
 SITE\_CHAR 1 10 0.35 1.5 0.1  
 SITE\_CHAR 2 10 0.14 1.0 0.1  
 SITE\_CHAR 3 10 0.16 2.0 0.1  
 SITE\_CHAR 4 10 0.18 2.0 0.1  
 SITE\_CHAR 1 11 0.35 1.5 0.1  
 SITE\_CHAR 2 11 0.14 1.0 0.1  
 SITE\_CHAR 3 11 0.16 2.0 0.1  
 SITE\_CHAR 4 11 0.18 2.0 0.1  
 SITE\_CHAR 1 12 0.35 1.5 0.1  
 SITE\_CHAR 2 12 0.12 0.7 0.1  
 SITE\_CHAR 3 12 0.12 0.3 0.1  
 SITE\_CHAR 4 12 0.14 1.0 0.1

JOB REPORT MSN02\_03.RPT  
 MESSAGES MSN02\_03.MSG  
 METPREP  
 DATA MSN02\_MR.MET  
 OUTPUT MSN02.SFC  
 PROFILE MSN02.PFL  
 LOCATION MADISON 89.33W 43.13N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.1  
 SITE\_CHAR 2 1 0.14 1.0 0.1  
 SITE\_CHAR 3 1 0.16 2.0 0.1  
 SITE\_CHAR 4 1 0.18 2.0 0.1  
 SITE\_CHAR 1 2 0.35 1.5 0.1  
 SITE\_CHAR 2 2 0.14 1.0 0.1  
 SITE\_CHAR 3 2 0.16 2.0 0.1  
 SITE\_CHAR 4 2 0.18 2.0 0.1  
 SITE\_CHAR 1 3 0.35 1.5 0.1  
 SITE\_CHAR 2 3 0.14 1.0 0.1  
 SITE\_CHAR 3 3 0.16 2.0 0.1  
 SITE\_CHAR 4 3 0.18 2.0 0.1  
 SITE\_CHAR 1 4 0.35 1.5 0.1  
 SITE\_CHAR 2 4 0.14 1.0 0.1  
 SITE\_CHAR 3 4 0.16 2.0 0.1  
 SITE\_CHAR 4 4 0.18 2.0 0.1  
 SITE\_CHAR 1 5 0.35 1.5 0.1  
 SITE\_CHAR 2 5 0.14 1.0 0.1  
 SITE\_CHAR 3 5 0.16 2.0 0.1  
 SITE\_CHAR 4 5 0.18 2.0 0.1  
 SITE\_CHAR 1 6 0.35 1.5 0.1  
 SITE\_CHAR 2 6 0.14 1.0 0.1  
 SITE\_CHAR 3 6 0.16 2.0 0.1  
 SITE\_CHAR 4 6 0.18 2.0 0.1  
 SITE\_CHAR 1 7 0.35 1.5 0.6  
 SITE\_CHAR 2 7 0.14 1.0 0.6  
 SITE\_CHAR 3 7 0.16 2.0 0.6  
 SITE\_CHAR 4 7 0.18 2.0 0.6  
 SITE\_CHAR 1 8 0.35 1.5 0.1  
 SITE\_CHAR 2 8 0.14 1.0 0.1  
 SITE\_CHAR 3 8 0.16 2.0 0.2  
 SITE\_CHAR 4 8 0.18 2.0 0.1  
 SITE\_CHAR 1 9 0.35 1.5 0.6  
 SITE\_CHAR 2 9 0.14 1.0 0.6  
 SITE\_CHAR 3 9 0.16 2.0 0.6  
 SITE\_CHAR 4 9 0.18 2.0 0.6  
 SITE\_CHAR 1 10 0.35 1.5 0.1  
 SITE\_CHAR 2 10 0.14 0.7 0.1  
 SITE\_CHAR 3 10 0.16 0.8 0.2  
 SITE\_CHAR 4 10 0.18 1.0 0.1  
 SITE\_CHAR 1 11 0.60 1.5 0.01  
 SITE\_CHAR 2 11 0.14 0.4 0.05  
 SITE\_CHAR 3 11 0.18 0.8 0.1  
 SITE\_CHAR 4 11 0.18 1.0 0.05  
 SITE\_CHAR 1 12 0.60 1.5 0.001  
 SITE\_CHAR 2 12 0.18 0.4 0.05  
 SITE\_CHAR 3 12 0.18 0.8 0.1  
 SITE\_CHAR 4 12 0.20 1.0 0.01

JOB REPORT MTW02\_03.RPT  
 MESSAGES MTW02\_03.MSG  
 METPREP  
 DATA MTW02\_MR.MET  
 OUTPUT MTW02.SFC  
 PROFILE MTW02.PFL  
 LOCATION MANITOWC 87.67W 44.13N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.60 1.5 0.01  
 SITE\_CHAR 2 1 0.14 0.3 0.03  
 SITE\_CHAR 3 1 0.20 0.5 0.2  
 SITE\_CHAR 4 1 0.18 0.7 0.05  
 SITE\_CHAR 1 2 0.60 1.5 0.01  
 SITE\_CHAR 2 2 0.14 0.3 0.03  
 SITE\_CHAR 3 2 0.20 0.5 0.2  
 SITE\_CHAR 4 2 0.18 0.7 0.05  
 SITE\_CHAR 1 3 0.60 1.5 0.01  
 SITE\_CHAR 2 3 0.14 0.3 0.03  
 SITE\_CHAR 3 3 0.20 0.5 0.2  
 SITE\_CHAR 4 3 0.18 0.7 0.05  
 SITE\_CHAR 1 4 0.60 1.5 0.01  
 SITE\_CHAR 2 4 0.14 0.4 0.05  
 SITE\_CHAR 3 4 0.18 0.8 0.2  
 SITE\_CHAR 4 4 0.18 1.0 0.05  
 SITE\_CHAR 1 5 0.60 1.5 0.01  
 SITE\_CHAR 2 5 0.14 0.4 0.05  
 SITE\_CHAR 3 5 0.18 0.8 0.2  
 SITE\_CHAR 4 5 0.18 1.0 0.05  
 SITE\_CHAR 1 6 0.50 1.5 0.1  
 SITE\_CHAR 2 6 0.14 0.7 0.1  
 SITE\_CHAR 3 6 0.16 0.8 0.1  
 SITE\_CHAR 4 6 0.18 1.0 0.1  
 SITE\_CHAR 1 7 0.60 1.5 0.01  
 SITE\_CHAR 2 7 0.14 0.4 0.05  
 SITE\_CHAR 3 7 0.18 0.8 0.2  
 SITE\_CHAR 4 7 0.18 1.0 0.05  
 SITE\_CHAR 1 8 0.60 1.5 0.01  
 SITE\_CHAR 2 8 0.14 0.4 0.05  
 SITE\_CHAR 3 8 0.18 0.8 0.2  
 SITE\_CHAR 4 8 0.18 1.0 0.05  
 SITE\_CHAR 1 9 0.60 1.5 0.01  
 SITE\_CHAR 2 9 0.14 0.4 0.05  
 SITE\_CHAR 3 9 0.18 0.5 0.2  
 SITE\_CHAR 4 9 0.18 1.0 0.05  
 SITE\_CHAR 1 10 0.60 1.5 0.01  
 SITE\_CHAR 2 10 0.14 0.3 0.03  
 SITE\_CHAR 3 10 0.20 0.5 0.2  
 SITE\_CHAR 4 10 0.18 0.7 0.05  
 SITE\_CHAR 1 11 0.60 1.5 0.01  
 SITE\_CHAR 2 11 0.14 0.3 0.03  
 SITE\_CHAR 3 11 0.20 0.5 0.2  
 SITE\_CHAR 4 11 0.18 0.7 0.05  
 SITE\_CHAR 1 12 0.60 1.5 0.01  
 SITE\_CHAR 2 12 0.14 0.3 0.03  
 SITE\_CHAR 3 12 0.20 0.5 0.2  
 SITE\_CHAR 4 12 0.18 0.7 0.05

JOB REPORT MFI02\_03.RPT  
 MESSAGES MFI02\_03.MSG  
 METPREP  
 DATA MFI02\_MR.MET  
 OUTPUT MFI02.SFC  
 PROFILE MFI02.PFL  
 LOCATION MARSHFLD 90.19W 44.64N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.6  
 SITE\_CHAR 2 1 0.14 1.0 0.6  
 SITE\_CHAR 3 1 0.16 2.0 0.6  
 SITE\_CHAR 4 1 0.18 2.0 0.6  
 SITE\_CHAR 1 2 0.35 1.5 0.1  
 SITE\_CHAR 2 2 0.14 1.0 0.1  
 SITE\_CHAR 3 2 0.16 2.0 0.2  
 SITE\_CHAR 4 2 0.18 2.0 0.1  
 SITE\_CHAR 1 3 0.60 1.5 0.01  
 SITE\_CHAR 2 3 0.14 0.3 0.05  
 SITE\_CHAR 3 3 0.18 0.5 0.2  
 SITE\_CHAR 4 3 0.18 0.7 0.05  
 SITE\_CHAR 1 4 0.60 1.5 0.01  
 SITE\_CHAR 2 4 0.14 0.3 0.03  
 SITE\_CHAR 3 4 0.20 0.5 0.2  
 SITE\_CHAR 4 4 0.18 0.7 0.05  
 SITE\_CHAR 1 5 0.60 1.5 0.01  
 SITE\_CHAR 2 5 0.14 0.3 0.03  
 SITE\_CHAR 3 5 0.20 0.5 0.2  
 SITE\_CHAR 4 5 0.18 0.7 0.05  
 SITE\_CHAR 1 6 0.60 1.5 0.01  
 SITE\_CHAR 2 6 0.14 0.3 0.03  
 SITE\_CHAR 3 6 0.20 0.5 0.2  
 SITE\_CHAR 4 6 0.18 0.7 0.05  
 SITE\_CHAR 1 7 0.60 1.5 0.01  
 SITE\_CHAR 2 7 0.14 0.3 0.03  
 SITE\_CHAR 3 7 0.20 0.5 0.2  
 SITE\_CHAR 4 7 0.18 0.7 0.05  
 SITE\_CHAR 1 8 0.60 1.5 0.01  
 SITE\_CHAR 2 8 0.14 0.3 0.03  
 SITE\_CHAR 3 8 0.20 0.5 0.2  
 SITE\_CHAR 4 8 0.18 0.7 0.05  
 SITE\_CHAR 1 9 0.60 1.5 0.01  
 SITE\_CHAR 2 9 0.14 0.3 0.03  
 SITE\_CHAR 3 9 0.20 0.5 0.2  
 SITE\_CHAR 4 9 0.18 0.7 0.05  
 SITE\_CHAR 1 10 0.60 1.5 0.01  
 SITE\_CHAR 2 10 0.14 0.3 0.03  
 SITE\_CHAR 3 10 0.20 0.5 0.2  
 SITE\_CHAR 4 10 0.18 0.7 0.05  
 SITE\_CHAR 1 11 0.60 1.5 0.01  
 SITE\_CHAR 2 11 0.14 0.3 0.03  
 SITE\_CHAR 3 11 0.20 0.5 0.2  
 SITE\_CHAR 4 11 0.18 0.7 0.05  
 SITE\_CHAR 1 12 0.35 1.5 0.6  
 SITE\_CHAR 2 12 0.14 1.0 0.6  
 SITE\_CHAR 3 12 0.16 2.0 0.6  
 SITE\_CHAR 4 12 0.18 2.0 0.6

JOB REPORT MKE02\_03.RPT  
 MESSAGES MKE02\_03.MSG  
 METPREP  
 DATA MKE02\_MR.MET  
 OUTPUT MKE02.SFC  
 PROFILE MKE02.PFL  
 LOCATION MILWAUKEE 87.90W 42.95N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.1  
 SITE\_CHAR 2 1 0.14 1.0 0.1  
 SITE\_CHAR 3 1 0.16 2.0 0.1  
 SITE\_CHAR 4 1 0.18 2.0 0.1  
 SITE\_CHAR 1 2 0.35 1.5 0.1  
 SITE\_CHAR 2 2 0.14 1.0 0.1  
 SITE\_CHAR 3 2 0.16 2.0 0.1  
 SITE\_CHAR 4 2 0.18 2.0 0.1  
 SITE\_CHAR 1 3 0.35 1.5 0.1  
 SITE\_CHAR 2 3 0.14 1.0 0.1  
 SITE\_CHAR 3 3 0.16 2.0 0.1  
 SITE\_CHAR 4 3 0.18 2.0 0.1  
 SITE\_CHAR 1 4 0.35 1.5 0.1  
 SITE\_CHAR 2 4 0.14 1.0 0.1  
 SITE\_CHAR 3 4 0.16 2.0 0.1  
 SITE\_CHAR 4 4 0.18 2.0 0.1  
 SITE\_CHAR 1 5 0.35 1.5 0.1  
 SITE\_CHAR 2 5 0.14 1.0 0.1  
 SITE\_CHAR 3 5 0.16 2.0 0.1  
 SITE\_CHAR 4 5 0.18 2.0 0.1  
 SITE\_CHAR 1 6 0.35 1.5 0.1  
 SITE\_CHAR 2 6 0.14 1.0 0.1  
 SITE\_CHAR 3 6 0.16 2.0 0.1  
 SITE\_CHAR 4 6 0.18 2.0 0.1  
 SITE\_CHAR 1 7 0.35 1.5 0.1  
 SITE\_CHAR 2 7 0.14 1.0 0.1  
 SITE\_CHAR 3 7 0.16 2.0 0.1  
 SITE\_CHAR 4 7 0.18 2.0 0.1  
 SITE\_CHAR 1 8 0.35 1.5 0.1  
 SITE\_CHAR 2 8 0.14 1.0 0.1  
 SITE\_CHAR 3 8 0.16 2.0 0.1  
 SITE\_CHAR 4 8 0.18 2.0 0.1  
 SITE\_CHAR 1 9 0.35 1.5 0.1  
 SITE\_CHAR 2 9 0.14 1.0 0.1  
 SITE\_CHAR 3 9 0.16 2.0 0.1  
 SITE\_CHAR 4 9 0.18 2.0 0.1  
 SITE\_CHAR 1 10 0.35 1.5 0.1  
 SITE\_CHAR 2 10 0.14 1.0 0.1  
 SITE\_CHAR 3 10 0.16 2.0 0.1  
 SITE\_CHAR 4 10 0.18 2.0 0.1  
 SITE\_CHAR 1 11 0.35 1.5 0.1  
 SITE\_CHAR 2 11 0.14 1.0 0.1  
 SITE\_CHAR 3 11 0.16 2.0 0.1  
 SITE\_CHAR 4 11 0.18 2.0 0.1  
 SITE\_CHAR 1 12 0.35 1.5 0.6  
 SITE\_CHAR 2 12 0.14 1.0 0.6  
 SITE\_CHAR 3 12 0.16 2.0 0.6  
 SITE\_CHAR 4 12 0.18 2.0 0.6

JOB REPORT CWA02\_03.RPT  
 MESSAGES CWA02\_03.MSG  
 METPREP  
 DATA CWA02\_MR.MET  
 OUTPUT CWA02.SFC  
 PROFILE CWA02.PFL  
 LOCATION MOSINEE 89.67W 44.78N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.1  
 SITE\_CHAR 2 1 0.14 0.7 0.2  
 SITE\_CHAR 3 1 0.16 0.5 0.2  
 SITE\_CHAR 4 1 0.18 0.8 0.2  
 SITE\_CHAR 1 2 0.35 1.5 0.1  
 SITE\_CHAR 2 2 0.14 0.7 0.1  
 SITE\_CHAR 3 2 0.16 0.5 0.2  
 SITE\_CHAR 4 2 0.18 0.8 0.1  
 SITE\_CHAR 1 3 0.35 1.5 0.1  
 SITE\_CHAR 2 3 0.14 1.0 0.1  
 SITE\_CHAR 3 3 0.16 2.0 0.1  
 SITE\_CHAR 4 3 0.18 2.0 0.1  
 SITE\_CHAR 1 4 0.35 1.5 0.05  
 SITE\_CHAR 2 4 0.12 0.3 0.2  
 SITE\_CHAR 3 4 0.14 0.3 0.2  
 SITE\_CHAR 4 4 0.16 0.7 0.2  
 SITE\_CHAR 1 5 0.35 1.5 0.05  
 SITE\_CHAR 2 5 0.12 0.3 0.2  
 SITE\_CHAR 3 5 0.14 0.3 0.2  
 SITE\_CHAR 4 5 0.16 0.7 0.2  
 SITE\_CHAR 1 6 0.35 1.5 0.05  
 SITE\_CHAR 2 6 0.14 0.3 0.1  
 SITE\_CHAR 3 6 0.16 0.5 0.2  
 SITE\_CHAR 4 6 0.18 0.7 0.1  
 SITE\_CHAR 1 7 0.35 1.5 0.1  
 SITE\_CHAR 2 7 0.14 1.0 0.1  
 SITE\_CHAR 3 7 0.16 2.0 0.1  
 SITE\_CHAR 4 7 0.18 2.0 0.1  
 SITE\_CHAR 1 8 0.35 1.5 0.1  
 SITE\_CHAR 2 8 0.14 0.7 0.1  
 SITE\_CHAR 3 8 0.16 0.5 0.2  
 SITE\_CHAR 4 8 0.18 0.8 0.1  
 SITE\_CHAR 1 9 0.35 1.5 0.1  
 SITE\_CHAR 2 9 0.14 1.0 0.1  
 SITE\_CHAR 3 9 0.16 2.0 0.1  
 SITE\_CHAR 4 9 0.18 2.0 0.1  
 SITE\_CHAR 1 10 0.35 1.5 0.1  
 SITE\_CHAR 2 10 0.14 1.0 0.1  
 SITE\_CHAR 3 10 0.16 2.0 0.1  
 SITE\_CHAR 4 10 0.18 2.0 0.1  
 SITE\_CHAR 1 11 0.35 1.5 0.1  
 SITE\_CHAR 2 11 0.14 0.7 0.1  
 SITE\_CHAR 3 11 0.16 0.8 0.1  
 SITE\_CHAR 4 11 0.18 1.0 0.1  
 SITE\_CHAR 1 12 0.35 1.5 0.05  
 SITE\_CHAR 2 12 0.14 0.4 0.2  
 SITE\_CHAR 3 12 0.16 0.8 0.2  
 SITE\_CHAR 4 12 0.18 1.0 0.2

JOB REPORT OSH02\_03.RPT  
MESSAGES OSH02\_03.MSG

METPREP  
DATA OSH02\_MR.MET

OUTPUT OSH02.SFC  
PROFILE OSH02.PFL

LOCATION OSHKOSH 88.56W 43.98N 6

METHOD REFLEVEL SUBNWS  
METHOD WIND\_DIR RANDOM  
NWS\_HGT WIND 10.0  
FREQ\_SECT SEASONAL 12  
SECTOR 1 15 45  
SECTOR 2 45 75  
SECTOR 3 75 105  
SECTOR 4 105 135  
SECTOR 5 135 165  
SECTOR 6 165 195  
SECTOR 7 195 225  
SECTOR 8 225 255  
SECTOR 9 255 285  
SECTOR 10 285 315  
SECTOR 11 315 345  
SECTOR 12 345 15  
SITE\_CHAR 1 1 0.35 1.5 0.1  
SITE\_CHAR 2 1 0.14 1.0 0.1  
SITE\_CHAR 3 1 0.16 2.0 0.1  
SITE\_CHAR 4 1 0.18 2.0 0.1  
SITE\_CHAR 1 2 0.35 1.5 0.1  
SITE\_CHAR 2 2 0.14 1.0 0.1  
SITE\_CHAR 3 2 0.16 2.0 0.1  
SITE\_CHAR 4 2 0.18 2.0 0.1  
SITE\_CHAR 1 3 0.35 1.5 0.1  
SITE\_CHAR 2 3 0.14 1.0 0.1  
SITE\_CHAR 3 3 0.16 2.0 0.1  
SITE\_CHAR 4 3 0.18 2.0 0.1  
SITE\_CHAR 1 4 0.35 1.5 0.1  
SITE\_CHAR 2 4 0.14 1.0 0.1  
SITE\_CHAR 3 4 0.16 2.0 0.2  
SITE\_CHAR 4 4 0.18 2.0 0.1  
SITE\_CHAR 1 5 0.35 1.5 0.1  
SITE\_CHAR 2 5 0.14 1.0 0.1  
SITE\_CHAR 3 5 0.16 2.0 0.2  
SITE\_CHAR 4 5 0.18 2.0 0.1  
SITE\_CHAR 1 6 0.35 1.5 0.1  
SITE\_CHAR 2 6 0.14 1.0 0.1  
SITE\_CHAR 3 6 0.16 2.0 0.1  
SITE\_CHAR 4 6 0.18 2.0 0.1  
SITE\_CHAR 1 7 0.60 1.5 0.01  
SITE\_CHAR 2 7 0.14 0.3 0.03  
SITE\_CHAR 3 7 0.20 0.5 0.2  
SITE\_CHAR 4 7 0.18 0.7 0.05  
SITE\_CHAR 1 8 0.60 1.5 0.01  
SITE\_CHAR 2 8 0.14 0.4 0.05  
SITE\_CHAR 3 8 0.18 0.8 0.1  
SITE\_CHAR 4 8 0.18 1.0 0.05  
SITE\_CHAR 1 9 0.35 1.5 0.1  
SITE\_CHAR 2 9 0.14 1.0 0.1  
SITE\_CHAR 3 9 0.16 2.0 0.1  
SITE\_CHAR 4 9 0.18 2.0 0.1  
SITE\_CHAR 1 10 0.35 1.5 0.1  
SITE\_CHAR 2 10 0.14 1.0 0.1  
SITE\_CHAR 3 10 0.16 2.0 0.1  
SITE\_CHAR 4 10 0.18 2.0 0.1  
SITE\_CHAR 1 11 0.35 1.5 0.1  
SITE\_CHAR 2 11 0.14 1.0 0.1  
SITE\_CHAR 3 11 0.16 2.0 0.1  
SITE\_CHAR 4 11 0.18 2.0 0.1  
SITE\_CHAR 1 12 0.35 1.5 0.1  
SITE\_CHAR 2 12 0.14 1.0 0.1  
SITE\_CHAR 3 12 0.16 2.0 0.1  
SITE\_CHAR 4 12 0.18 2.0 0.1

JOB REPORT RGK02\_03.RPT  
 MESSAGES RGK02\_03.MSG  
 METPREP  
 DATA RGK02\_MR.MET  
 OUTPUT RGK02.SFC  
 PROFILE RGK02.PFL  
 LOCATION REDWING 92.48W 44.59N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.60 1.5 0.01  
 SITE\_CHAR 2 1 0.14 0.3 0.03  
 SITE\_CHAR 3 1 0.20 0.5 0.2  
 SITE\_CHAR 4 1 0.18 0.7 0.05  
 SITE\_CHAR 1 2 0.60 1.5 0.01  
 SITE\_CHAR 2 2 0.14 0.3 0.03  
 SITE\_CHAR 3 2 0.20 0.5 0.2  
 SITE\_CHAR 4 2 0.18 0.7 0.05  
 SITE\_CHAR 1 3 0.60 1.5 0.01  
 SITE\_CHAR 2 3 0.14 0.3 0.03  
 SITE\_CHAR 3 3 0.20 0.5 0.2  
 SITE\_CHAR 4 3 0.18 0.7 0.05  
 SITE\_CHAR 1 4 0.50 1.5 0.5  
 SITE\_CHAR 2 4 0.12 0.7 0.6  
 SITE\_CHAR 3 4 0.12 0.3 0.6  
 SITE\_CHAR 4 4 0.14 1.0 0.6  
 SITE\_CHAR 1 5 0.50 1.5 0.01  
 SITE\_CHAR 2 5 0.12 0.3 0.03  
 SITE\_CHAR 3 5 0.12 0.5 0.2  
 SITE\_CHAR 4 5 0.14 0.7 0.05  
 SITE\_CHAR 1 6 0.50 1.5 0.01  
 SITE\_CHAR 2 6 0.12 0.3 0.03  
 SITE\_CHAR 3 6 0.12 0.5 0.2  
 SITE\_CHAR 4 6 0.14 0.7 0.05  
 SITE\_CHAR 1 7 0.50 1.5 0.01  
 SITE\_CHAR 2 7 0.12 0.3 0.03  
 SITE\_CHAR 3 7 0.12 0.5 0.2  
 SITE\_CHAR 4 7 0.14 0.7 0.05  
 SITE\_CHAR 1 8 0.50 1.5 0.01  
 SITE\_CHAR 2 8 0.12 0.3 0.03  
 SITE\_CHAR 3 8 0.12 0.5 0.2  
 SITE\_CHAR 4 8 0.14 0.7 0.05  
 SITE\_CHAR 1 9 0.60 1.5 0.01  
 SITE\_CHAR 2 9 0.14 0.3 0.03  
 SITE\_CHAR 3 9 0.20 0.5 0.2  
 SITE\_CHAR 4 9 0.18 0.7 0.05  
 SITE\_CHAR 1 10 0.60 1.5 0.01  
 SITE\_CHAR 2 10 0.14 0.3 0.03  
 SITE\_CHAR 3 10 0.20 0.5 0.2  
 SITE\_CHAR 4 10 0.18 0.7 0.05  
 SITE\_CHAR 1 11 0.60 1.5 0.01  
 SITE\_CHAR 2 11 0.14 0.3 0.03  
 SITE\_CHAR 3 11 0.20 0.5 0.2  
 SITE\_CHAR 4 11 0.18 0.7 0.05  
 SITE\_CHAR 1 12 0.60 1.5 0.01  
 SITE\_CHAR 2 12 0.14 0.3 0.03  
 SITE\_CHAR 3 12 0.20 0.5 0.2  
 SITE\_CHAR 4 12 0.18 0.7 0.05

JOB REPORT RHI02\_03.RPT  
 MESSAGES RHI02\_03.MSG  
 METPREP  
 DATA RHI02\_MR.MET  
 OUTPUT RHI02.SFC  
 PROFILE RHI02.PFL  
 LOCATION RHINLAND 89.47W 45.63N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 1.3  
 SITE\_CHAR 2 1 0.12 0.7 1.3  
 SITE\_CHAR 3 1 0.12 0.3 1.3  
 SITE\_CHAR 4 1 0.12 0.8 1.3  
 SITE\_CHAR 1 2 0.35 1.5 1.3  
 SITE\_CHAR 2 2 0.12 0.7 1.3  
 SITE\_CHAR 3 2 0.12 0.3 1.3  
 SITE\_CHAR 4 2 0.12 0.8 1.3  
 SITE\_CHAR 1 3 0.35 1.5 0.1  
 SITE\_CHAR 2 3 0.14 1.0 0.1  
 SITE\_CHAR 3 3 0.16 2.0 0.1  
 SITE\_CHAR 4 3 0.18 2.0 0.1  
 SITE\_CHAR 1 4 0.35 1.5 1.3  
 SITE\_CHAR 2 4 0.12 0.7 1.3  
 SITE\_CHAR 3 4 0.12 0.3 1.3  
 SITE\_CHAR 4 4 0.12 0.8 1.3  
 SITE\_CHAR 1 5 0.35 1.5 1.3  
 SITE\_CHAR 2 5 0.12 0.7 1.3  
 SITE\_CHAR 3 5 0.12 0.3 1.3  
 SITE\_CHAR 4 5 0.12 0.8 1.3  
 SITE\_CHAR 1 6 0.35 1.5 1.3  
 SITE\_CHAR 2 6 0.12 0.7 1.3  
 SITE\_CHAR 3 6 0.12 0.3 1.3  
 SITE\_CHAR 4 6 0.12 0.8 1.3  
 SITE\_CHAR 1 7 0.35 1.5 1.3  
 SITE\_CHAR 2 7 0.12 0.7 1.3  
 SITE\_CHAR 3 7 0.12 0.3 1.3  
 SITE\_CHAR 4 7 0.12 0.8 1.3  
 SITE\_CHAR 1 8 0.35 1.5 1.3  
 SITE\_CHAR 2 8 0.12 0.7 1.3  
 SITE\_CHAR 3 8 0.12 0.3 1.3  
 SITE\_CHAR 4 8 0.12 0.8 1.3  
 SITE\_CHAR 1 9 0.35 1.5 0.1  
 SITE\_CHAR 2 9 0.12 0.7 0.1  
 SITE\_CHAR 3 9 0.12 0.3 0.2  
 SITE\_CHAR 4 9 0.14 0.8 0.1  
 SITE\_CHAR 1 10 0.35 1.5 1.3  
 SITE\_CHAR 2 10 0.12 0.7 1.3  
 SITE\_CHAR 3 10 0.12 0.3 1.3  
 SITE\_CHAR 4 10 0.12 0.8 1.3  
 SITE\_CHAR 1 11 0.35 1.5 1.3  
 SITE\_CHAR 2 11 0.12 0.7 1.3  
 SITE\_CHAR 3 11 0.12 0.3 1.3  
 SITE\_CHAR 4 11 0.12 0.8 1.3  
 SITE\_CHAR 1 12 0.35 1.5 1.3  
 SITE\_CHAR 2 12 0.12 0.7 1.3  
 SITE\_CHAR 3 12 0.12 0.3 1.3  
 SITE\_CHAR 4 12 0.12 0.8 1.3

JOB REPORT SUE02\_03.RPT  
 MESSAGES SUE02\_03.MSG  
 METPREP  
 DATA SUE02\_MR.MET  
 OUTPUT SUE02.SFC  
 PROFILE SUE02.PFL  
 LOCATION STURGBAY 87.42W 44.85N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.5  
 SITE\_CHAR 2 1 0.12 0.7 1.0  
 SITE\_CHAR 3 1 0.12 0.3 1.3  
 SITE\_CHAR 4 1 0.12 0.8 0.8  
 SITE\_CHAR 1 2 0.35 1.5 1.3  
 SITE\_CHAR 2 2 0.12 0.7 1.3  
 SITE\_CHAR 3 2 0.12 0.3 1.3  
 SITE\_CHAR 4 2 0.12 0.8 1.3  
 SITE\_CHAR 1 3 0.35 1.5 0.01  
 SITE\_CHAR 2 3 0.12 0.3 0.03  
 SITE\_CHAR 3 3 0.12 0.3 0.2  
 SITE\_CHAR 4 3 0.14 0.7 0.05  
 SITE\_CHAR 1 4 0.50 1.5 0.1  
 SITE\_CHAR 2 4 0.14 0.7 0.1  
 SITE\_CHAR 3 4 0.16 0.5 0.2  
 SITE\_CHAR 4 4 0.18 1.0 0.1  
 SITE\_CHAR 1 5 0.50 1.5 0.1  
 SITE\_CHAR 2 5 0.14 0.7 0.1  
 SITE\_CHAR 3 5 0.16 0.5 0.2  
 SITE\_CHAR 4 5 0.18 1.0 0.1  
 SITE\_CHAR 1 6 0.35 1.5 0.1  
 SITE\_CHAR 2 6 0.14 1.0 0.1  
 SITE\_CHAR 3 6 0.16 2.0 0.1  
 SITE\_CHAR 4 6 0.18 2.0 0.1  
 SITE\_CHAR 1 7 0.60 1.5 0.01  
 SITE\_CHAR 2 7 0.14 0.3 0.03  
 SITE\_CHAR 3 7 0.20 0.5 0.2  
 SITE\_CHAR 4 7 0.18 0.7 0.05  
 SITE\_CHAR 1 8 0.60 1.5 0.01  
 SITE\_CHAR 2 8 0.14 0.3 0.03  
 SITE\_CHAR 3 8 0.20 0.5 0.2  
 SITE\_CHAR 4 8 0.18 0.7 0.05  
 SITE\_CHAR 1 9 0.60 1.5 0.01  
 SITE\_CHAR 2 9 0.14 0.3 0.03  
 SITE\_CHAR 3 9 0.20 0.5 0.2  
 SITE\_CHAR 4 9 0.18 0.7 0.05  
 SITE\_CHAR 1 10 0.50 1.5 0.5  
 SITE\_CHAR 2 10 0.14 0.7 1.0  
 SITE\_CHAR 3 10 0.16 0.5 1.0  
 SITE\_CHAR 4 10 0.18 1.0 0.8  
 SITE\_CHAR 1 11 0.50 1.5 0.5  
 SITE\_CHAR 2 11 0.12 0.7 1.0  
 SITE\_CHAR 3 11 0.12 0.3 1.3  
 SITE\_CHAR 4 11 0.12 1.0 0.8  
 SITE\_CHAR 1 12 0.35 1.5 0.5  
 SITE\_CHAR 2 12 0.12 0.7 1.0  
 SITE\_CHAR 3 12 0.12 0.3 1.3  
 SITE\_CHAR 4 12 0.12 1.0 0.8

JOB REPORT AUW02\_03.RPT  
 MESSAGES AUW02\_03.MSG  
 METPREP  
 DATA AUW02\_MR.MET  
 OUTPUT AUW02.SFC  
 PROFILE AUW02.PFL  
 LOCATION WAUSAU 89.63W 44.93N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.6  
 SITE\_CHAR 2 1 0.14 1.0 0.6  
 SITE\_CHAR 3 1 0.16 2.0 0.6  
 SITE\_CHAR 4 1 0.18 2.0 0.6  
 SITE\_CHAR 1 2 0.35 1.5 0.6  
 SITE\_CHAR 2 2 0.14 0.7 0.6  
 SITE\_CHAR 3 2 0.16 0.8 0.6  
 SITE\_CHAR 4 2 0.18 1.0 0.6  
 SITE\_CHAR 1 3 0.35 1.5 0.1  
 SITE\_CHAR 2 3 0.12 0.7 0.2  
 SITE\_CHAR 3 3 0.14 0.3 0.2  
 SITE\_CHAR 4 3 0.16 0.8 0.2  
 SITE\_CHAR 1 4 0.35 1.5 0.1  
 SITE\_CHAR 2 4 0.14 1.0 0.2  
 SITE\_CHAR 3 4 0.16 2.0 0.2  
 SITE\_CHAR 4 4 0.18 2.0 0.2  
 SITE\_CHAR 1 5 0.35 1.5 0.1  
 SITE\_CHAR 2 5 0.14 1.0 0.1  
 SITE\_CHAR 3 5 0.16 2.0 0.1  
 SITE\_CHAR 4 5 0.18 2.0 0.1  
 SITE\_CHAR 1 6 0.20 1.5 0.001  
 SITE\_CHAR 2 6 0.12 0.1 0.001  
 SITE\_CHAR 3 6 0.10 0.1 0.001  
 SITE\_CHAR 4 6 0.14 0.1 0.001  
 SITE\_CHAR 1 7 0.20 1.5 0.001  
 SITE\_CHAR 2 7 0.12 0.1 0.001  
 SITE\_CHAR 3 7 0.10 0.1 0.001  
 SITE\_CHAR 4 7 0.14 0.1 0.001  
 SITE\_CHAR 1 8 0.35 1.5 0.1  
 SITE\_CHAR 2 8 0.14 1.0 0.2  
 SITE\_CHAR 3 8 0.16 2.0 0.2  
 SITE\_CHAR 4 8 0.18 2.0 0.2  
 SITE\_CHAR 1 9 0.35 1.5 0.1  
 SITE\_CHAR 2 9 0.14 1.0 0.1  
 SITE\_CHAR 3 9 0.16 2.0 0.1  
 SITE\_CHAR 4 9 0.18 2.0 0.1  
 SITE\_CHAR 1 10 0.30 1.5 0.001  
 SITE\_CHAR 2 10 0.12 0.1 0.05  
 SITE\_CHAR 3 10 0.12 0.1 0.1  
 SITE\_CHAR 4 10 0.14 0.1 0.01  
 SITE\_CHAR 1 11 0.35 1.5 0.6  
 SITE\_CHAR 2 11 0.14 1.0 0.6  
 SITE\_CHAR 3 11 0.16 2.0 0.6  
 SITE\_CHAR 4 11 0.18 2.0 0.6  
 SITE\_CHAR 1 12 0.35 1.5 0.6  
 SITE\_CHAR 2 12 0.14 1.0 0.6  
 SITE\_CHAR 3 12 0.16 2.0 0.6  
 SITE\_CHAR 4 12 0.18 2.0 0.6

JOB REPORT DLL02\_03.RPT  
MESSAGES DLL02\_03.MSG

METPREP  
DATA DLL02\_MR.MET

OUTPUT DLL02.SFC  
PROFILE DLL02.PFL

LOCATION BARABOO 89.77W 43.52N 6

METHOD REFLEVEL SUBNWS  
METHOD WIND\_DIR RANDOM  
NWS\_HGT WIND 10.0  
FREQ\_SECT SEASONAL 12  
SECTOR 1 15 45  
SECTOR 2 45 75  
SECTOR 3 75 105  
SECTOR 4 105 135  
SECTOR 5 135 165  
SECTOR 6 165 195  
SECTOR 7 195 225  
SECTOR 8 225 255  
SECTOR 9 255 285  
SECTOR 10 285 315  
SECTOR 11 315 345  
SECTOR 12 345 15  
SITE\_CHAR 1 1 0.50 1.5 0.1  
SITE\_CHAR 2 1 0.14 0.7 0.1  
SITE\_CHAR 3 1 0.16 0.5 0.2  
SITE\_CHAR 4 1 0.18 1.0 0.1  
SITE\_CHAR 1 2 0.60 1.5 0.01  
SITE\_CHAR 2 2 0.14 0.3 0.03  
SITE\_CHAR 3 2 0.20 0.5 0.2  
SITE\_CHAR 4 2 0.18 0.7 0.05  
SITE\_CHAR 1 3 0.50 1.5 0.1  
SITE\_CHAR 2 3 0.14 0.7 0.1  
SITE\_CHAR 3 3 0.16 0.5 0.2  
SITE\_CHAR 4 3 0.18 1.0 0.1  
SITE\_CHAR 1 4 0.60 1.5 0.01  
SITE\_CHAR 2 4 0.14 0.3 0.03  
SITE\_CHAR 3 4 0.20 0.5 0.2  
SITE\_CHAR 4 4 0.18 0.7 0.05  
SITE\_CHAR 1 5 0.60 1.5 0.01  
SITE\_CHAR 2 5 0.14 0.3 0.03  
SITE\_CHAR 3 5 0.20 0.5 0.2  
SITE\_CHAR 4 5 0.18 0.7 0.05  
SITE\_CHAR 1 6 0.60 1.5 0.01  
SITE\_CHAR 2 6 0.14 0.3 0.03  
SITE\_CHAR 3 6 0.20 0.5 0.2  
SITE\_CHAR 4 6 0.18 0.7 0.05  
SITE\_CHAR 1 7 0.60 1.5 0.01  
SITE\_CHAR 2 7 0.14 0.3 0.03  
SITE\_CHAR 3 7 0.20 0.5 0.2  
SITE\_CHAR 4 7 0.18 0.7 0.05  
SITE\_CHAR 1 8 0.60 1.5 0.01  
SITE\_CHAR 2 8 0.14 0.3 0.03  
SITE\_CHAR 3 8 0.20 0.5 0.2  
SITE\_CHAR 4 8 0.18 0.7 0.05  
SITE\_CHAR 1 9 0.60 1.5 0.01  
SITE\_CHAR 2 9 0.14 0.3 0.03  
SITE\_CHAR 3 9 0.20 0.5 0.2  
SITE\_CHAR 4 9 0.18 0.7 0.05  
SITE\_CHAR 1 10 0.60 1.5 0.01  
SITE\_CHAR 2 10 0.14 0.3 0.03  
SITE\_CHAR 3 10 0.20 0.5 0.2  
SITE\_CHAR 4 10 0.18 0.7 0.05  
SITE\_CHAR 1 11 0.60 1.5 0.01  
SITE\_CHAR 2 11 0.14 0.3 0.03  
SITE\_CHAR 3 11 0.20 0.5 0.2  
SITE\_CHAR 4 11 0.18 0.7 0.05  
SITE\_CHAR 1 12 0.60 1.5 0.01  
SITE\_CHAR 2 12 0.14 0.3 0.03  
SITE\_CHAR 3 12 0.20 0.5 0.2  
SITE\_CHAR 4 12 0.18 0.7 0.05

JOB REPORT ISW02\_03.RPT  
 MESSAGES ISW02\_03.MSG  
 METPREP  
 DATA ISW02\_MR.MET  
 OUTPUT ISW02.SFC  
 PROFILE ISW02.PFL  
 LOCATION WISCRAPD 89.84W 44.36N 6  
 METHOD REFLEVEL SUBNWS  
 METHOD WIND\_DIR RANDOM  
 NWS\_HGT WIND 10.0  
 FREQ\_SECT SEASONAL 12  
 SECTOR 1 15 45  
 SECTOR 2 45 75  
 SECTOR 3 75 105  
 SECTOR 4 105 135  
 SECTOR 5 135 165  
 SECTOR 6 165 195  
 SECTOR 7 195 225  
 SECTOR 8 225 255  
 SECTOR 9 255 285  
 SECTOR 10 285 315  
 SECTOR 11 315 345  
 SECTOR 12 345 15  
 SITE\_CHAR 1 1 0.35 1.5 0.6  
 SITE\_CHAR 2 1 0.14 1.0 0.6  
 SITE\_CHAR 3 1 0.16 2.0 0.6  
 SITE\_CHAR 4 1 0.18 2.0 0.6  
 SITE\_CHAR 1 2 0.35 1.5 0.6  
 SITE\_CHAR 2 2 0.14 1.0 0.6  
 SITE\_CHAR 3 2 0.16 2.0 0.6  
 SITE\_CHAR 4 2 0.18 2.0 0.6  
 SITE\_CHAR 1 3 0.35 1.5 0.6  
 SITE\_CHAR 2 3 0.14 0.7 0.6  
 SITE\_CHAR 3 3 0.16 0.5 0.6  
 SITE\_CHAR 4 3 0.18 0.8 0.6  
 SITE\_CHAR 1 4 0.35 1.5 0.6  
 SITE\_CHAR 2 4 0.14 0.7 0.6  
 SITE\_CHAR 3 4 0.16 0.5 0.6  
 SITE\_CHAR 4 4 0.18 0.8 0.6  
 SITE\_CHAR 1 5 0.35 1.5 1.3  
 SITE\_CHAR 2 5 0.12 0.7 1.3  
 SITE\_CHAR 3 5 0.12 0.3 1.3  
 SITE\_CHAR 4 5 0.12 0.8 1.3  
 SITE\_CHAR 1 6 0.35 1.5 0.01  
 SITE\_CHAR 2 6 0.12 0.3 0.05  
 SITE\_CHAR 3 6 0.12 0.3 0.2  
 SITE\_CHAR 4 6 0.14 0.7 0.05  
 SITE\_CHAR 1 7 0.35 1.5 0.05  
 SITE\_CHAR 2 7 0.12 0.3 0.2  
 SITE\_CHAR 3 7 0.14 0.3 0.2  
 SITE\_CHAR 4 7 0.16 0.7 0.2  
 SITE\_CHAR 1 8 0.35 1.5 0.05  
 SITE\_CHAR 2 8 0.14 0.3 0.2  
 SITE\_CHAR 3 8 0.16 0.5 0.2  
 SITE\_CHAR 4 8 0.18 0.7 0.2  
 SITE\_CHAR 1 9 0.35 1.5 0.05  
 SITE\_CHAR 2 9 0.12 0.3 0.2  
 SITE\_CHAR 3 9 0.14 0.3 0.2  
 SITE\_CHAR 4 9 0.16 0.7 0.2  
 SITE\_CHAR 1 10 0.35 1.5 0.01  
 SITE\_CHAR 2 10 0.14 0.4 0.05  
 SITE\_CHAR 3 10 0.16 0.5 0.2  
 SITE\_CHAR 4 10 0.18 0.8 0.05  
 SITE\_CHAR 1 11 0.35 1.5 0.01  
 SITE\_CHAR 2 11 0.14 0.4 0.05  
 SITE\_CHAR 3 11 0.16 0.5 0.2  
 SITE\_CHAR 4 11 0.18 0.8 0.05  
 SITE\_CHAR 1 12 0.35 1.5 0.1  
 SITE\_CHAR 2 12 0.14 0.7 0.2  
 SITE\_CHAR 3 12 0.16 0.5 0.2  
 SITE\_CHAR 4 12 0.18 0.8 0.2



## APPENDIX 7

### Meteorological Data Page from WDNR Website

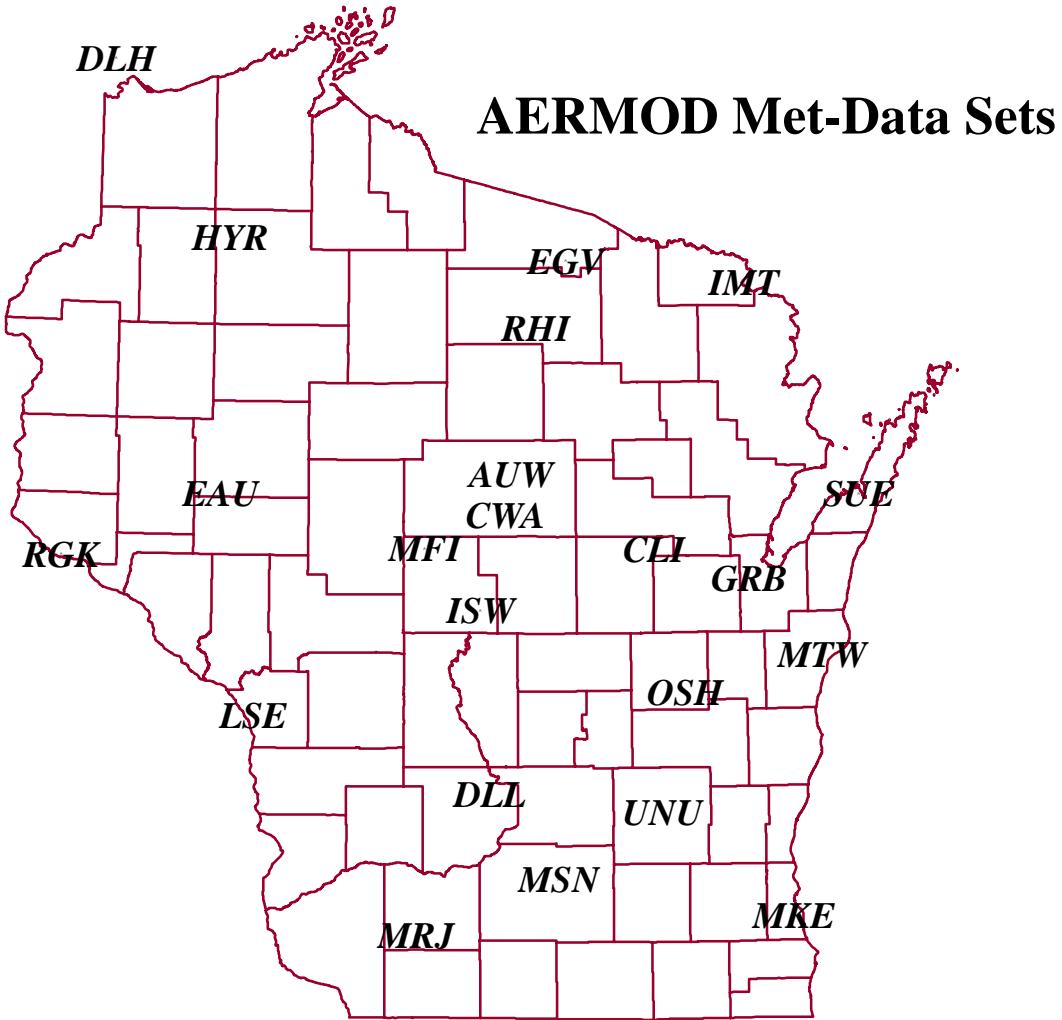
#### Meteorological Data

WDNR has extracted, quality assured, and merged raw surface and upper air data from a number of stations for use in AERMOD. Land use information obtained from various sources allowed for processing surface characteristics within three kilometers of the instrumentation site to provide complete surface and profile files. A memorandum is available ([aermet.pdf](#)) that contains specific details on the AERMET processing.

The table below contains all relevant information including ID, elevation of the sensor, links to the data sets, maps of land use surrounding the sensor, and the text input file used for stage 3 processing in AERMET. Please note the following:

- The elevation should be entered into the AERMOD input file in the ME pathway under the keyword PROFBASE.
- The land use plot gives a general overview of the land use within 3 kilometers of the sensor. When more than one meteorologically similar station is found, the user should use the land use to determine representativeness.
- The AERMET Stage 3 input file provides the specific roughness, albedo, and bowen ratio for each wind sector for each season.
- All stations meet the USEPA completeness requirement (>90%) but the number of missing hours is provided so the user can further differentiate between similar representative data sets. If the station is meteorologically representative and has similar land use, then the station with less missing data should be selected.
- Following the table is a map of Wisconsin with the locations of all stations provided.

WMO ID	WBAN ID	FAA ID	LAT	LON	ELEV (m)	Surface Station NAME	Upper Air Station NAME (ID)	Land Use Plot	AERMET Stg 3 Input File	Number Hrs Missing	Number Hrs Calm
726502	99999	KCLI	44.62	-88.73	251.0	CLINTONVLLE MUNI	Green Bay (14898)	cli_lu.pdf	cli_3.inp	1924	10801
727450	14913	KDLH	46.83	-92.22	435.0	DULUTH INTERNATIONAL ARP	Minneapolis (94983)	dlh_lu.pdf	dlh_3.inp	15	2378
726504	99999	KEGV	45.93	-89.27	498.0	EAGLE RIVER UNION	Green Bay (14898)	egv_lu.pdf	egv_3.inp	2024	10495
726435	14991	KEAU	44.87	-91.48	277.0	EAU CLAIRE COUNTY AP	Minneapolis (94983)	eau_lu.pdf	eau_3.inp	22	6462
726450	14898	KGRB	44.48	-88.13	211.0	GREEN BAY AUSTIN STRAUBE	Green Bay (14898)	grb_lu.pdf	grb_3.inp	13	3919
726508	99999	KHYR	46.03	-91.45	370.0	HAYWARD MUNI ARPT	Minneapolis (94983)	hyr_lu.pdf	hyr_3.inp	669	10778
727437	99999	KIMT	45.82	-88.12	360.0	IRON MOUNTAIN/FORD	Green Bay (14898)	imt_lu.pdf	imt_3.inp	673	7159
726509	99999	KUNU	43.43	-88.70	285.0	JUNEAU\ODDGE CO	Green Bay (14898)	unu_lu.pdf	unu_3.inp	2374	5482
726430	14920	KLSE	43.87	-91.25	199.0	LA CROSSE MUNICIPAL ARPT	Minneapolis (94983)	lse_lu.pdf	lse_3.inp	29	2626
726410	14837	KMSN	43.13	-89.35	262.0	MADISON DANE CO REGIONAL	Green Bay (14898)	msn_lu.pdf	msn_3.inp	9	6619
726455	99999	KMTW	44.13	-87.68	198.0	MANITOWOC MUNI AWOS	Green Bay (14898)	mtw_lu.pdf	mtw_3.inp	1913	3136
726574	99999	KMFI	44.63	-90.18	389.0	MARSHFIELD MUNI	Green Bay (14898)	mfi_lu.pdf	mfi_3.inp	618	2303
726400	14839	KMKE	42.95	-87.90	220.0	MILWAUKEE MITCHELL INTL	Green Bay (14898)	mke_lu.pdf	mke_3.inp	2	2796
726507	99999	KMRJ	42.88	-90.23	359.0	MINERAL POINT	Green Bay (14898)	mrj_lu.pdf	mrj_3.inp	2569	4316
726465	99999	KCWA	44.78	-89.67	389.0	MOSINEE/CENTRAL WI	Green Bay (14898)	cwa_lu.pdf	cwa_3.inp	2186	4144
726456	99999	KOSH	43.97	-88.55	246.0	OSHKOSH/WITTMAN FLD	Green Bay (14898)	osh_lu.pdf	osh_3.inp	624	2485
726564	99999	KRGK	44.58	-92.48	239.0	RED WING	Minneapolis (94983)	rgk_lu.pdf	rgk_3.inp	2117	9024
727415	99999	KRHI	45.63	-89.47	495.0	RHINELANDER/ONEIDA	Green Bay (14898)	rhi_lu.pdf	rhi_3.inp	1242	5462
726458	99999	KSUE	44.85	-87.42	221.0	STURGEON BAY	Green Bay (14898)	sue_lu.pdf	sue_3.inp	2082	2431
726463	14897	KAUW	44.92	-89.63	366.0	WAUSAU MUNICIPAL ARPT	Green Bay (14898)	auw_lu.pdf	auw_3.inp	643	4678
726503	99999	KDLL	43.52	-89.77	298.0	WISCONSIN DELLS	Green Bay (14898)	dll_lu.pdf	dll_3.inp	2407	8979
726452	99999	KISW	44.35	-89.83	311.0	WISCONSIN RAPIDS	Green Bay (14898)	isw_lu.pdf	isw_3.inp	900	4844



### ISCST3 Data Note:

The processed meteorological data sets for use in ISCST3 are still available upon request. Please contact John Roth for information.